



The Role of Public-Private Partnerships in Meeting a Community's Water and Wastewater Needs – A Primer for Public Officials

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for National Association of Water Companies

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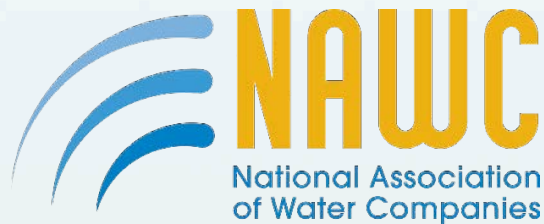
ABOUT THE HORINKO GROUP



The Horinko Group (THG) is an environmental and business development consulting firm operating at the intersection of policy, science, and communications. Founded in 2008, THG has established itself as an innovator and a trusted, third party convener. The firm has a proven track record of addressing complex natural resource challenges, while meeting the needs of the broader community.

THG advocates for efficiency, sustainability, and holistic solutions based on cutting-edge science and sound business practice. THG works alongside federal, state, and local governments, NGOs, and the private sector to achieve measurable results for its clients, partners, and the communities and markets in which they operate. There are unique challenges and opportunities given the fiscal and regulatory uncertainty of these times. THG assists all stakeholders in thinking strategically about these opportunities and capitalizing on the business advantages of sustainability.

ABOUT THE NATIONAL ASSOCIATION OF WATER COMPANIES



The National Association of Water Companies (NAWC) is the voice of the private water industry, including the regulated drinking and waste water utilities. NAWC proudly represents this group of quality water service providers, innovation drivers, creative financiers and responsible partners.

NAWC serves as a credible resource for safe and high-quality drinking water services. The association actively engages with municipal leaders and their communities, including educators, elected officials, regulators and other water industry experts. Our nation is facing serious challenges, and the NAWC and its members are providing powerful and pragmatic solutions.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. AN INTRODUCTION AND BACKGROUND TO PUBLIC-PRIVATE PARTNERSHIPS (P3s)	3
2. ASSESSING A COMMUNITY’S WATER AND WASTEWATER NEEDS AND ANALYZING P3 SOLUTIONS	4
2.1 Maintaining or Upgrading Existing Infrastructure	4
2.2 Constructing New Infrastructure	12
3. SELECTING THE BEST PATH FORWARD	15
4. SUGGESTIONS FOR IMPLEMENTING A SUCCESSFUL P3	16
5. CONCLUSION	18
APPENDIX – CHECKLIST: SHOULD YOUR COMMUNITY CONSIDER A P3 FOR ITS EXISTING WATER AND WASTEWATER INFRASTRUCTURE?	19
NOTES	20

EXECUTIVE SUMMARY

Communities challenged with aging water and wastewater infrastructure, increasingly complex regulatory requirements, and budgetary constraints are seeking alternative solutions through proven Public-Private Partnerships (P3s). This primer is designed to help public officials better understand their unique water and wastewater needs, and how various types of P3s can meet a municipality's infrastructure requirements.

A water and wastewater P3 is a contractual agreement between the public and private sector, sharing skills, assets, risks, and rewards, to jointly deliver a service or a project. The public sector hires one or more private firms to provide various functions, including operations and maintenance for an existing facility or system or expanding its footprint through new infrastructure construction. Asset ownership remains with the public sector under the P3 arrangement.

Through the contract and its performance standards, the public sector continues to exercise ultimate control over the facility or system.

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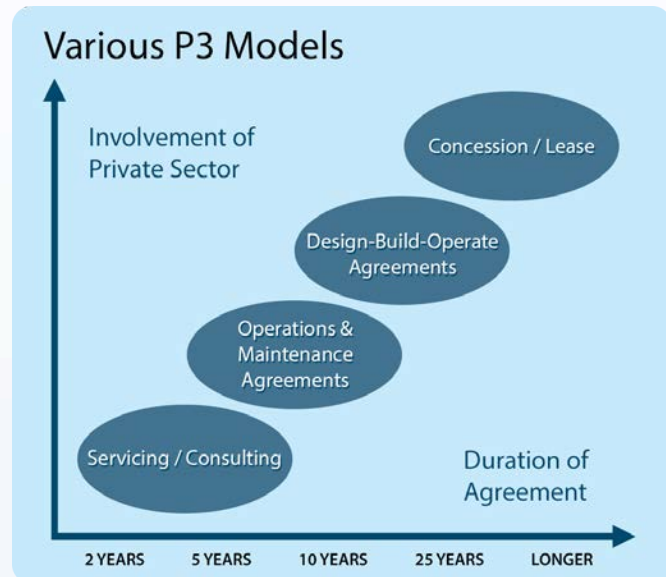
Today, private firms operate by contract more than 2,000 publicly owned water and wastewater systems in the United States. Such partnerships create opportunities for innovative solutions to meet water and wastewater needs and continue to serve communities well. Private sector firms gained contractual renewals in nearly 92% of the contracts out for bid and reported during the past decade (2004-2013).

In contemplating a P3, public officials must first understand the problem they are trying to solve. For example:

- 🕒 Is it maintaining, upgrading, or expanding a community's water infrastructure?
- 🕒 Is a community's water system underfunded and/or facing operational difficulties?
- 🕒 Do public officials want to transfer various risks to the private sector?

A wide variety of P3 models exist. Different models align municipal needs with private sector capabilities. For existing infrastructure, P3s include: 1) Servicing/Consulting Arrangements; 2) Operations and Maintenance Agreements; and, 3) more complex, long-term Concession/Lease Agreements. For new infrastructure, P3s include Design-Build-Operate Agreements.

Many public officials who have entered into P3 agreements have found they create long-term value and cost savings for local residents by providing significant managerial and professional expertise in complying with environmental standards, implementing new technologies, and meeting staffing requirements. This is particularly true for small to mid-size systems where professional and scientific expertise may be limited.



Private companies operating numerous facilities of different sizes and in various geographical settings can provide industry-wide best practices for utility operations. In addition to managerial, professional, and technical expertise, benefits also include:

- Ⓛ Achieving overall cost savings, improved operations, and better ongoing maintenance;
- Ⓛ Providing expertise in finance and capital markets, enabling P3s to effectively raise capital for upgrades and new infrastructure projects or to pay down indebtedness;
- Ⓛ Assuming various risks, such as financial, technological, and regulatory;
- Ⓛ Providing more cost effective and timely new infrastructure delivery; and,
- Ⓛ Spreading the costs of experts across the entire range of facilities it operates.

Each P3 contract can be structured to meet a community's unique needs and exact requirements while controlling against unreasonable rate increases, safeguarding public health and safety, and protecting existing employees' jobs. Three key elements also underpin the successful implementation of a P3: 1) the criteria for selecting the winning bidder; 2) careful contractual structuring and drafting; and, 3) continual monitoring and oversight.

Although not suitable for all situations, a P3 can reposition a community to better meet its needs and protect past investments in its water and wastewater system. In many cases, a P3 offers a viable way for the public sector to take advantage of the private sector's expertise and possibly its capital, and transfer many risks, whether for an existing facility or system or for new infrastructure construction.

1. AN INTRODUCTION AND BACKGROUND TO PUBLIC-PRIVATE PARTNERSHIPS (P3s)

This primer is designed to help public officials better understand their unique water and wastewater needs, and how various types of P3s can meet a municipality's infrastructure requirements. Relevant examples of successful P3 case studies are included throughout this primer to reveal how communities are taking advantage of these collaborative arrangements.

A water and wastewater P3 is a contractual arrangement between the public and private sector, sharing skills, assets, risks, and rewards, to jointly deliver a service or a project. The public sector can hire one or more private firms to deliver various services, including operations and maintenance, for a facility or system. Private firms operating multiple water facilities of different sizes and in various geographical settings can leverage their experiences and provide industry-wide insights and expertise to deliver operational, financial, and risk-related benefits for a community's water and wastewater assets.

Today, by contract private firms operate more than 2,000 publicly owned water and wastewater facilities or systems in the United States. Asset ownership remains with the public sector under the P3 arrangement. Through the contract and its performance standards, the public sector continues to exercise ultimate control over the facility or system. The contract imposes penalties and other disincentives on the private partner for failure to meet the performance standards.

Many local governments express satisfaction with their water and wastewater P3s. Over the past decade (2004-2013), contract renewal rates in most years exceeded 85 percent. Overall, nearly 92% of the 3,620 contracts reported as out for bid since 2004 were renewed with the incumbent provider or a competing private firm. Only about 3 percent reverted to municipal operation.¹

P3s employ private sector resources, such as technical, operational, and managerial expertise, in order to meet challenges governments face today in maintaining infrastructure. A private partner may inject financial capital, either its own funds or from other sources, into the facility or system for needed repairs, maintenance, and even improvements. A P3 opens the door for alternative funding sources through which a community can recapitalize its infrastructure assets. These arrangements also provide a mechanism for transferring various risks, including financial, technological, and regulatory, from the public to the private sector.

2. ASSESSING A COMMUNITY'S WATER AND WASTEWATER NEEDS AND ANALYZING P3 SOLUTIONS

In beginning to assess a community's water and wastewater system, it is useful to distinguish between the needs and objectives of existing infrastructure from those centered on new construction. A variety of P3 models are available, and each can be customized to meet a community's requirements. Through a P3, the private partner can provide various services for existing infrastructure or can assist in the construction and operation of new infrastructure.

2.1. Maintaining or Upgrading Existing Infrastructure

In contemplating a P3, public officials must first understand the problem they are trying to solve. A community's existing facility or system may face three needs: 1) operational; 2) financial; or, 3) risk-related.

D **Operational** questions involve the need for managerial and professional expertise, as well as personnel issues. Operational needs can run the gamut from improving billing and collection practices, implementing innovative technologies to improve water quality, retrofitting wastewater facilities into cogeneration plants by converting processed waste to energy, or by using new managerial techniques, such as comprehensive asset management and/or preventive maintenance programs.

Personnel issues that local governments often face include staff retention and recruitment, especially for small to mid-sized systems. When employees with decades of experience in the specialized water and wastewater field retire, their technical knowledge and skills can often be difficult for a community to replace on its own with qualified workers.

D **Financial** questions center on the need for additional capital, over both the short-term and the long-term. Maintaining or upgrading a city's facility or system often requires additional financial capacity. Chronic underinvestment can result in increased costs and decreased revenues, as well as service quality and safety concerns. A city may need to repair and replace its old, crumbling delivery system where outdated pipes or water main breaks cause a substantial percentage of water to leak away underground before reaching customers' taps. Antiquated water meters, which inaccurately measure use and consequently decrease billable water, may also need to be updated.

▷ **Risk-related** questions increasingly concern public officials. A municipality may want to transfer future risks, including financial liabilities, operations and maintenance, and infrastructure condition and upgrading, from the public sector to the private sector. This may be particularly true for systems that seek to implement new, innovative technologies. Likewise, the public sector may feel more comfortable transferring the regulatory compliance risk to a private partner, which has the staff with scientific and technological expertise to keep up with frequently updated U.S. EPA regulatory requirements for water quality, safety, and stormwater management.

A checklist entitled, “*Should Your Community Consider a P3 for Its Existing Water and Wastewater Infrastructure?*,” has been included as an Appendix to provide public officials a means to examine the above three needs in their communities and to aid in the early assessment of whether or not a P3 warrants consideration.

Relative to a community’s existing infrastructure, three types of P3s merit consideration: 1) Servicing/Consulting; 2) Operations and Maintenance; and, 3) Concession/Lease. Each one of these P3 models engages the private sector in the public facility’s operation in various degrees. Generally speaking, the duration of a private firm’s contractual terms to operate a public facility or system correlates proportionately to the amount of capital invested in the system.

Servicing/Consulting Arrangement

The most limited type of contractual arrangement involves a private entity providing ancillary, non-core functions. The public sector contracts with a private firm to provide various services, such as billing, collections, vehicle maintenance, meter reading, leak detection, laboratory services, security, or public relations. A service contract is usually a short-term agreement where the private firm takes responsibility for one or more specific tasks, freeing the public sector owner-operator to focus on its core areas. Firms performing these services, particularly those operating on a regional or national basis, take advantage of economies of scale and advanced technology. The contract specifies and regulates the performance of the service provided.

The arrangement may also take the form of a consulting contract where the private firm advises on operational and financing matters, in addition to human resource capabilities. Private firms that operate multiple facilities in various geographical locations can impart industry-wide insights and expertise while working alongside local employees knowledgeable about the facility or system.

District of Columbia Water and Sewer Authority Enters into a Consulting Agreement

In 2013, the District of Columbia Water and Sewer Authority entered into a four-month consulting contract with Veolia Water, a unit of Veolia Environnement, to conduct a comprehensive and independent review of its wholesale water provider, the Washington Aqueduct, a federally-owned and operated public water supply agency. Veolia Water assessed Washington Aqueduct's technical, operational, and organizational capacity and capabilities, financial management and revenue, informational technology systems, human resources, and procurement and contracting. This comprehensive evaluation enabled Veolia to provide recommendations that the Washington Aqueduct could implement to increase efficiencies, reduce costs, streamline operations, and ensure the continued, reliable delivery of water. The independent evaluation resulted in the identification of \$8 to \$12 million in potential annual savings, not only in day-to-day operations, but also in long-term capital planning and construction expenditures.²

Operations and Maintenance Agreements

Other types of P3s involve the delegation of more responsibilities to the private partner. The manner in which the public sector performs its role shifts to contract management and program oversight. Short-term operations and maintenance (O&M) contracts focus on operational benefits, while long-term O&M agreements often include a financial element.

Short-term O&M Agreement

Under a short-term O&M agreement, which usually lasts no more than ten years, the private partner assumes responsibility for day-to-day operations of a facility or system. It supervises the public sector's infrastructure personnel or, in some cases, may employ the facility or system's workforce itself. It may provide additional services, such as billing and collections.

Under the contract, the locality continues to set rates and collect revenues. A short-term O&M contract typically does not involve financial risk to the private partner or require any capital investment commitments. The following benefits illustrate the needs and objectives met through a short-term P3 contract:

D Meeting Operational Needs: A short-term O&M contract focuses on providing managerial and professional expertise and meeting a community's infrastructure personnel needs. It frequently implements an enhanced asset management and preventive maintenance program, which involves cataloging all assets into a database, creating a life cycle cost analysis of replacement components, and prioritizing repairs to attain the full useful life from each asset. An asset management strategy helps ensure that the facility or system will remain in good repair. It will rely on preventive maintenance to head off costly overhauls. Because emergency repairs are more expensive than preventive maintenance, a firm has a financial incentive to prevent infrastructure failure. A private firm typically will make better use of advanced technologies, including metering techniques and leak detection technologies, to facilitate operations and increase efficiencies, adopt streamlined procurement procedures, and implement improved information services designed to facilitate better decision-making. It will also implement flexible work hours, improve staff training, and provide succession planning and technical knowledge when long-standing workers retire.

A private partner typically provides lower cost customer service by integrating functions, such as call-in centers, billing, and collections, into a single system. Enhanced services along with the ability to experiment with new programs enables an improved responsiveness to consumer needs.

D Meeting Environmental Regulatory Requirements: Under a short-term O&M agreement, the private partner typically bears the risk of complying with environmental standards. Implementing required changes in order to meet regulations and standards that govern drinking water and wastewater treatment services, which frequently change and are increasingly more stringent, requires personnel who are knowledgeable and skilled in using modern technologies. A private firm employs scientific and technical experts who can be available as necessary.

D *Increasing Input Efficiency:* A private firm operating numerous facilities can use economies of scale to achieve better prices for equipment and supplies. It will minimize the chemical and energy costs of operating water and wastewater assets by carefully examining chemical use expending only the proper amounts and relying on its national or regional purchasing power to buy chemicals more cheaply in large quantities. It will rely on advanced technology to produce more energy efficient results by utilizing high-efficiency pumps, aeration and sludge processing, and facility lighting, as well as run equipment during off-peak hours.

In sum, a short-term P3 will allow a community to achieve operational benefits from the accumulated knowledge and skills gained by a firm operating numerous facilities and systems, of different sizes, and in various geographical settings. A private firm spreads the costs of expertise in information technology, energy efficiency, optimal chemical usage, preventive maintenance, and environmental compliance across the entire infrastructure it operates. A firm's ability to tap into its greater pool of technical skill and know-how provides operational benefits for a community's water and wastewater assets.

Chicago Heights, IL Enters into a Two-Year Operations and Management Agreement

In 2014, Chicago Heights, Illinois entered into a two-year operations and management agreement with Aqua America, through Aqua Resources. Under the terms of agreement, Chicago Heights retains ownership of its water and wastewater systems, which Aqua Resources operates and manages. During the two-year contract term, Aqua Resources will review, make recommendations, and implement improvements across all areas of the systems, including operation audits, capital improvements, leak detection programs, customer service programs, billing, supplies and supply contracts, and personnel and staffing levels.³

Long-term O&M Agreement

Under a longer-term agreement, usually lasting up to twenty years, a private firm operates and manages a facility or system, and depending on the contract, the firm may provide financial benefits to the public sector, including asset replacements and various capital improvements. Otherwise, capital investments remain the public sector's responsibility. Water usage rates are either set forth in the contract or continue to be regulated by the local governing entity (usually the water board) while the private partner typically bills and collects revenues.

Internal Revenue Service Revenue Procedure 97-13 also facilitates longer-term P3 contracts for up to twenty years, without resulting in disadvantageous income tax treatment for a locality's tax-exempt debt obligations.

Edison, New Jersey's 20-Year P3

Facing a long-neglected and insufficiently maintained water system marked by old galvanized infrastructure in need of repair and replacement and a local economy in dire economic straits, in 1997, Edison, NJ entered into a 20-year operations and management agreement for its water system with Edison Water Co. (EWC), a subsidiary of New Jersey American Water (NJAW), a unit of American Water.

Under the agreement, EWC performs all aspects of management, operations, maintenance, and repair, including cleaning and maintaining transmission lines, flushing the main lines, and billing and collections.

EWC provided the city with an upfront cash payment of \$5.1 million, used in part to retire \$625,000 of the city debt and meet other budgetary needs. The P3 contributed to more stabilized rates, with residential water rates frozen for the contract's first five years.

EWC installed new, state-of-the-art water meters as part of the agreement. After the completion of the contractually required minimum capital improvements, if standards set forth in the agreement were not met, NJAW agreed to spend up to an additional \$1 million to achieve those standards. In refurbishing the system to achieve substantial performance and water quality improvements, EWC cleaned and lined 115,000 feet of transmission lines, among other items.⁴

Concession/Lease Agreement

A P3 may take the form of the private partner entering into a concession/lease agreement, a relatively new model in the U.S. for the water sector, where the private firm assumes responsibility for all water system operations and for providing specified amounts of financial capital for infrastructure maintenance and upgrades. The concession model for the water sector offers many benefits to debt constrained cities or townships. It is characterized by private capital investment, both in an upfront payment to the city and through the term of the agreement. Thus, it permits the city to utilize private sector capital to finance its water infrastructure operation, maintenance, and upgrade costs, thereby avoiding adding to its own long-term debt obligations. This arrangement transfers specified risks from the public to the private sector, hence, meeting a community's operational, financial, and risk-related objectives.

As part of the concession, the lessee (private sector) pays the municipality (public sector-owner) a fee for the real property interest in return for the right to operate the facility or system for a specified long-term period (in excess of 20 years; usually 30 years or longer). The payment may consist of one upfront payment or a stream of periodic payments, such as lease rents, over the life of the agreement, which allows the local government to shore up its municipal balance sheet. The contract's long duration provides the lessee time to recoup its capital investment in the facility or system, including its payments made to the public sector.

The public authority continues to retain legal ownership of the assets and contractual oversight of the private partner, while generally making no guarantee to the lessee with respect to revenues or operating expenses. Rates typically are set forth in the terms of the lease contract, and the lessee bills customers and collects revenues. Assets are returned to the public sector at the end of the contract term.

Bayonne, NJ Municipal Utilities Authority's P3

The Bayonne New Jersey Municipal Utilities Authority (BMUA) owns the city's water and wastewater systems. In addition to a history of deferred asset maintenance and antiquated infrastructure, requiring expensive mitigation to deal with infrastructure deterioration and comply with federal regulations, it faced declining water usage, a substantial public debt burden (guaranteed by the city) and a credit risk to the municipality, and concerns regarding operating efficiencies and attracting and retaining qualified staff, together with limited options to finance needed improvements.⁵

In December 2012, BMUA entered into a 40-year Bayonne Water & Wastewater Concession Agreement with the concessionaire, Bayonne Water Joint Venture LLC, a special purpose vehicle, consisting of Kohlberg Kravis Roberts & Co. (KKR), an investment firm, and United Water, a unit of Suez Environnement Co. Under the agreement, the concessionaire will operate the system, including billing, collection, operations and maintenance (O&M), in turn, through United Water Operations Contracts, Inc. (UWOC), pursuant to a sub-contract. With the joint venture, the agreement gives BMUA access to Suez and United Water's water and wastewater expertise to solve its operational needs, while transferring various risks to the private sector. The concessionaire is responsible for operating and maintaining the water and wastewater systems in accordance with written operating and technical standards, thereby transferring the O&M burden, as well as the regulatory compliance, to the private sector.

As part of the transaction, the P3 obtained \$175 million in debt-equity financing. From these funds, BMUA received an upfront payment of \$150 million, which enabled the authority to pay off its debt of some \$125 million, thereby helping ease the pressure on the city's finances. Also, some \$6.5 million was set aside for a rate stabilization fund to help with the rate transition provided for in the agreement. The concessionaire also agreed to put some \$107 million into the system over 40 years, including about \$14 million during the P3's first three years to pay for capital improvements. Going forward, the concessionaire will spend \$2.5 million per year, adjusted for inflation, on other capital projects it identifies in consultation with BMUA, based on needed critical upgrades, repairs, and safety improvements.⁶

As part of the P3, the concessionaire will receive basically all of the water and sewer revenues from the systems for 40 years. While recognizing that private investors must achieve a reasonable rate of return on their investment, BMUA did not want the two firms to receive a windfall. The P3 agreement effectively caps their potential profits by an innovative rate-setting formula that performs three functions: 1) guarantees annual capital investments for the systems; 2) sets fixed, predictable, annual rate increases for the ratepayers; and, 3) establishes a known annual revenue path for the concessionaire. Revenues in excess of O&M costs, capital improvements, debt servicing, and equity distributions, among other items, will go into the rate stabilization fund. If water usage drops, the concessionaire can tap as much as \$5 million of this reserve fund to make up for any revenue shortfalls.

In addition to other expected operating efficiencies, the agreement provides that the systems' employees would be reduced from 22 to 19 during a one-year transition period. The concessionaire required UWOC at its discretion to provide: 1) employment for the employees at water or wastewater systems UWOC operates in the New York/New Jersey area; 2) work opportunities for existing employees to develop new and alternative job skills; or 3) severance payments.

BMUA will continue to exist, providing oversight and monitoring of the P3, funded by an annual fee of \$500,000 per year, indexed for inflation, payable by the concessionaire, to cover its costs in administering the agreement. In addition to strict operating and technical standards, the agreement contains extensive default, remedial, and termination provisions. In the event of a default by the concessionaire or BMUA, significant termination compensation is payable.⁷

2.2. Constructing New Infrastructure

If a community's needs and objectives require major footprint expansion or new infrastructure construction, it may want to consider another type of P3, a design-build-operate (DBO) agreement. Expanding a community's infrastructure footprint often requires funding availability, design innovations, and enhanced delivery and construction efficiencies, which private firms may better achieve. The public sector may also want to transfer various risks to the private sector. One private entity, as the prime contractor, can serve as the focal point of responsibility. This arrangement helps address and resolves a host of possible issues relevant to managing a project, such as financial liability, timely completion, and cost overruns that arise during the design and build phases of new construction.

Seattle Public Utilities: Cedar Water Treatment Facility P3

Changing water regulations required Seattle Public Utilities (SPU), a department of Seattle, Washington city government, to consider installing a \$200 million filtration system to treat its water supply from the 90,500 acre, pristine Cedar River Watershed or investigating alternatives to filtering the water.⁸

In 2001, SPU entered into a DBO arrangement with CH2M HILL to help it manage the water treatment for the Cedar River Watershed. The contract is for a 25-year term, consisting of an initial fifteen years with two 5-year renewals.

As the first water treatment plant in the United States to employ large-scale ultraviolet (UV) technology (treating 180 million gallons of water per day with expandable capacity of 275 mgd), the UV and ozone treatments combined with watershed protection, eliminate intensive chemical use and costly filtration. Under its P3 contract, CH2M HILL's scope of work included design, permitting, material and equipment procurement, construction, onsite inspection, start-up, commissioning, and operations (for up to 25 years) of the facility.

These services were contracted for some \$50 million less than previously estimated by SPU had it used a conventional design-bid-build procurement process. In addition to the cost savings, the DBO approach considerably shortened the facility's construction schedule.⁹

Design-Build-Operate Agreement

DBO agreements have evolved from conventional design-bid-build arrangements. Under a conventional municipal procurement arrangement, a qualified engineering firm, selected by a locality, designs a facility under a professional services contract. The locality then awards the construction contract to a different firm via a public bid process. The community owns, operates, and maintains the infrastructure once built.

With a modern design-build contract, one firm performs both functions. Again, after the completion of construction, with a design-build contract, the public sector owns the asset and assumes responsibility for its operations and maintenance.

Under a DBO agreement, the private sector, typically a consortium of firms, takes responsibility for designing a facility or system, then builds and operates it under the agreement. Serving as the construction manager, the private consortium delivers the completed infrastructure to the public agency on a specified date and at a guaranteed cost. After the asset passes an independent acceptance test of its performance, it is placed in service. A private firm then operates and maintains the infrastructure, which the city owns, during the contract term and assumes the full range of operational responsibilities, including providing managerial and professional expertise. The private partner typically provides, or secures, working capital for the infrastructure operation, maintenance, and even future upgrades. Rates are set as part of the contract, and the asset is returned to the public sector owner at the end of the contract term.

The DBO model has numerous advantages. It allows the public sector to take advantage of design innovations flowing from private sector expertise. It streamlines the project schedule and reduces costs by eliminating separate selection processes for engineering, construction, procurement, and operating services.

The contractor provides the public sector with cost, schedule, and performance guarantees ensuring that the project will perform as required, and the infrastructure will be maintained, repaired, and replaced, according to specified standards, thereby providing long-term value to the public sector. The private sector assumes financial responsibility for project completion, including all design and construction risks, such as delays and cost overruns. During the operation and maintenance phase, the P3 transfers various risks, including financial, technological, and regulatory, from the public to the private sector.

Seattle Public Utilities: Tolt Water Filtration Facility P3

In the mid-1990s, with a growing population, especially in its suburbs, Seattle, Washington needed to improve its water quality and reliability and to increase its water supply. Similar to many other large municipal utilities, SPU confronted a number of infrastructure challenges, including increasingly stringent water quality regulations and pressure to develop a new water supply source to meet the growing demand by suburban wholesale customers.¹⁰

In 1997, SPU entered into an innovative DBO arrangement with a private consortium to develop the city's first water filtration plant, which was placed in service in 2001. The contract was for a 25-year term, an initial fifteen years with two 5-year renewals, at the city's discretion.

Seattle used the DBO model to provide reliable, cost effective project delivery and subsequent operation, while retaining public sector ownership and financing of the Tolt Water Filtration Facility. The agreement encouraged technological innovation, within a range of proven technologies, while transferring the risk of high filtration technology, which increased the annual supply of water with turbidity levels well below state regulatory limits, from the public to the private sector. Furthermore, the cost effective arrangement transferred many other risks involved with this integrated approach to water filtration plant design, construction, and operation to the private consortium of firms.

The contract used a performance-based approach to project deliverables, without detailed specifications for design and construction, enabling the project to proceed in the most efficient, practical manner, subject to meeting water quality and supply, asset maintenance, and engineering standards. With the DBO contract valued at \$101 million, the arrangement generated an estimated cost savings of \$70 million compared with a conventional, non-integrated design-bid-build procurement followed by municipal operation and maintenance of a facility for 25 years.

Today, American Water and Camp Dresser & McKee jointly operate and maintain the plant, which provides about 30 percent of Seattle's and its wholesale customers annual water supply. At full capacity, the facility can generate 120 million gallons of water daily. In addition to its economical mode of operation, the plan improved regulatory compliance by removing organic material from the water.¹¹

3. SELECTING THE BEST PATH FORWARD

Because a P3 is not ideal for all situations, public officials must analyze whether other alternatives can better meet their specific infrastructure needs and objectives. The risks and benefits of alternatives to increasing cash flow, decreasing costs, and raising capital in lieu of entering into a P3 should be closely examined.

To increase a system's cash flows, a city could raise water rates or decrease expenses, including for example deferring maintenance. However, communities often find it politically challenging, if not impossible, to increase rates in the near-term. Deferring maintenance can reduce expenditures, but only exacerbates an asset's deterioration.

Municipal utility managers could also decrease costs by streamlining procurement of goods and services, bulk purchasing, and enhanced information to facilitate better decision-making. Though, utility managers are often encumbered by status quo modus operandi decision-making and resist the uncertainty of change.

A municipality could borrow funds to raise capital for major upgrades and new construction by floating tax-free bonds, which permits borrowing for the public sector at lower interest rates than a private entity. The municipality could also borrow Federal Clean Water State Revolving and Drinking Water State Revolving Funds. Though, this approach would only generate limited amounts of capital.

In comparison to meeting a city's water and wastewater needs and objectives with a P3, borrowing to solve its capital requirements results in several trade-offs. Continued public operation of the infrastructure means that all the risks, including operational, financial, and regulatory remain in the hands of the public sector. Also, the public sector may not achieve the long-term value through operational enhancements that a private operator could bring to an arrangement by leveraging its managerial and professional expertise. Additionally, a P3 can be structured to access private sector capital providing an alternative financing option and avoiding further municipal indebtedness for already debt-constrained communities.

At any rate, public officials should examine the full life cycle costs associated with project delivery. One method for assessing comprehensive project costs is through Value for Money (VfM) analysis, which compares the total costs of traditional project delivery to that of a P3 arrangement.¹² VfM is a quantitative tool that can help communities make better-informed

decisions for selecting the most appropriate mode of project delivery. Key components of the analysis include:

- ⓓ Assessment of public sector cost of traditional delivery compared to P3 option;
- ⓓ Full life cycle cost and revenue analysis for each option;
- ⓓ Determination of most appropriate risk sharing scenario; and,
- ⓓ Assessment of public opinion and maintenance of transparency.

Through this side-by-side comparison, public officials can begin to better comprehend the costs and savings associated with each method. While procurement and financing costs may be higher as part of the P3 arrangement, the full life cycle analysis considers the savings achieved over the life of the entire project under the P3 arrangement through reduced costs (e.g. efficiency gains, economies of scale) associated with design, construction, operations, maintenance, and risk allocation. Conducting a proper evaluation of all options will help public officials select the best path forward.

4. SUGGESTIONS FOR IMPLEMENTING A SUCCESSFUL P3

Three important elements underpin the successful implementation of a P3: 1) the criteria for selecting the winning bidder; 2) careful contractual structuring and drafting; and, 3) continual monitoring and oversight.

- ⓓ ***The criteria for selecting the winning bidder are critical.*** Unless required by law, a locality need not award a contract on financial criteria, such as a low-bid, on a short-term operations and maintenance agreement. Rather, the public sector should award a contract on an overall best-value-basis, and not on price alone, selecting the winning bidder on the combination of cost and value. A best value approach includes a private partner's successful operating history of other systems, an analysis of the contractor's financial strength and technical expertise, as well as monetary considerations. The public sector should focus on having a well-run system, including service quality, efficiency, and stability.

D ***A carefully drafted contract will surmount many fears that may surface.*** The P3 agreement will control rate increases, protect existing employees, and safeguard against service declines and public health concerns. The contract will clearly state the objective performance standards with respect to operations, maintenance, and safety, and will describe the division of responsibilities between the public and private sectors. The contract will allocate various risks, such as financial, operational, technological, and liability, between the parties. Typically, the public sector assigns to its private partner the financial responsibility for non-compliance with environmental standards. To invest or secure significant amounts of capital for asset renewal and expansion, private firms require long-term arrangements. These long-term contracts, generally structured as concessions, enable private firms to furnish managerial and professional expertise, meet personnel needs, and provide or obtain capital that will deliver value to a locality far into the future. The private sector has the incentive to maintain high quality assets and provide customers with improved services over the life of the contract.

If a failure to meet any performance standard constitutes a material breach, contracts provide for termination, among other remedies, thereby motivating private firms to meet their contractual and other legally mandated obligations.

D ***Consistent and diligent oversight and accountability are key.*** Contracts contain periodic reporting and monitoring provisions. Various monitoring techniques include inspections, reports, public complaints, and an assessment of meeting performance standards. Consumer involvement, and specifically customer complaints, provide monitoring information and serve as an oversight mechanism with respect to operator behavior.

Public officials should not be concerned if they have never carried out a P3. To implement a successful P3, the public sector may engage an experienced professional engineering, financial, and legal team. Drawing on their use of best practices, their expertise in financial modeling and analysis, and their knowledge of how to structure the partnership to benefit the public, these experts will build a community's capacity for entering into a successful P3. They can advise on the bidding process and perform due diligence in investigating bidder's financial capacity and operational success as well as performance and environmental compliance history, and help with contract negotiations and drafting.

5. CONCLUSION

Although not a universal remedy, a P3 can reposition a community to better meet its needs and protect past investments in its water and wastewater system. In many cases, a P3 offers a viable way for the public sector to take advantage of the private sector's expertise and possibly its capital, and transfer many risks, whether for an existing facility or system or for new infrastructure construction. Assuming some type of P3 meets a community's infrastructure requirements, proponents ought to reach out to key stakeholders, other public officials, and the public authority's employees and customers to explain the reasons for considering a P3. Focusing on transparency and community involvement in the decision-making process is critical to building awareness and support for a project.

APPENDIX

The following checklist¹³ can aid in the early assessment if a P3 warrants consideration. The checklist provides public officials a means to examine three critical needs – operational, financial, and regulatory – for its existing water and wastewater infrastructure. Answering *yes* even once merits a community’s consideration of a P3 project.

Should Your Community Consider a P3 for Its Existing Water and Wastewater Infrastructure?		
QUESTION	YES	NO
Operational: Do your water customers complain about taste, odor, or appearance?		
Operational: Is your billing collection rate worse than the industry average?		
Operational: Could updated technology improve your operations?		
Operational: Do you have high employee turnover?		
Operational: Are you concerned that your staff may be unable to make needed system improvements?		
Financial: Is your facility or system in need of capital improvements?		
Financial: Is your community considering rate increases?		
Risk-Related: Have you been cited for non-compliance with environmental standards?		
Risk-Related: Do you foresee problems in meeting new regulatory standards?		

NOTES

1. Leonard Gilroy, *Annual Privatization Report 2014: Local Government Privatization, June 2014, 20-21 (Table 2: Contract Renewals and Lost Government Contacts, 2004-2013)*. During the period 2004-2013, 4.7 percent of contracts fell into an “Other” category.
2. Veolia Environnement, *Press Release, Drinking Water Customers in Nation’s Capital to Benefit from Consulting Evaluation of Wholesale Drinking Water Supplier, October 10, 2013* and Veolia North America, *Press Release, DC Water, Washington Aqueduct and Veolia Partner in Nation’s Capital to Save Up to \$12 Million Per Year Through Efficiencies in Water Production Management, May 29, 2014*.
3. Aqua America, *Press Release, Aqua CEO Announces Two-Year Operations and Management Agreement with Chicago Heights, IL, February 14, 2014*.
4. American Water, *Operations, Edison Water Company, Edison, NJ*.
5. Joseph P. Baumann, attorney for BMUA, *Public-Private Partnerships: Case Study: Bayonne Municipal Utilities Authority, American Water Intelligence Summit Infrastructure Finance Panel, November 14, 2012 (Public-Private Partnerships), BMUA Challenges & Objectives*.
6. *Bayonne Water & Wastewater Concession Agreement, The Bayonne Municipal Utilities Authority and Bayonne Water Joint Venture, LLC, December 20, 2012 (Bayonne Concession Agreement), Sections 4, 6, 7, 10, Schedule I (Operating and Technical Standards) and United Water, Press Release, United Water And KKR Sign Unique Utility Partnership With City of Bayonne, NJ, December 20, 2012*. See also *Public Works Financing, “United Water, KKR Seal A 40-Year P3 in Bayonne, NJ,” 277 (December, 2012): 1-2; Dennis J. Enright, Why the Bayonne Water/Wastewater Public-Private Partnership Succeeded, NW Financial Group, LLC, April 1, 2013; Michael Corkery, “Private Equity Tries On the Hard Hat,” Wall Street Journal, April 23, 2013, C1; Randy Rodgers, “Bayonne Uses Private Investment to Address Water Woes,” Sustainable City Network, December 13, 2013*.
7. *Bayonne Concession Agreement, Sections 2, 7, 8, 14, 15, 16 Schedule 2 (Tariff Regime)*. See also Joseph P. Baumann, Jr., “Four Lessons From Bayonne’s P3,” *Public Works Financing 277 (December 2012): 2 and Baumann, Public-Private Partnerships*.
8. *CH2M HILL Seattle Cedar Water Treatment Facility, 2006 NCPPP Infrastructure Award Winner* <www.ncppp.org/resources/case-studies/waterwastewater-infrastructure/ch2m-hill-seattle-cedar-water-treatment-facility>.
9. *CH2M HILL Seattle Cedar Water Treatment Facility*.
10. Elizabeth S. Kelly, Scott Haskins, Paul D. Reiter, “Implementing a DBO Project,” *Journal of the American Water Works 90: 6 (June 1998): 34-46, at 35-36*.
11. American Water, *Engineering, Tolt Water Treatment Plant* <www.amwater.com/files/ToltWaterTreatmentPlantCaseStudy06.16.09.p>; Elizabeth S. Kelly, Scott Haskins, Rodney Eng, “Innovative Contracting for New Facilities: Seattle’s Use of Design-Build-Operate for Implementation of Water Treatment Plants,” in *Reinventing Water and Wastewater Systems: Global Lessons for Improving Water Management*, eds. Paul Seidenstat, David Haarmeyer, Simon Hakin (New York, John Wiley, 2002), 249-270; Elizabeth S. Kelly, Paul D. Reiter, Scott Haskins, “Implementing Seattle’s Tolt Treatment Facilities’ Design-Build-Operate Project,” in *American’s Water and Wastewater Industries: Competition and Privatization*, eds. Paul Seidenstat, Michael Nadol, Simon Hakim (Vienna, VA: Public Utilities Reports, 2000), 133-153.
12. Adapted from and fully elaborated in *The National Council for Public-Private Partnerships, Testing Tradition: Assessing the Added Value of Public-Private Partnerships, 2012, 8-11*.
13. Adapted from *Water Partnership Council, Establishing Public-Private Partnerships for Water and Wastewater Systems: A Blueprint for Success, 2003, 44*.



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