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Memorandum

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Subject	**Town of Orleans, MA** **Water Quality and Wastewater Planning** **Task Number 5.d – Financial Evaluation** **Draft Technical Memorandum Public Private Partnership Options**
Project Number	60476644
From	Thomas Parece, P.E., AECOM Project Manager
Date	05/04/16

1. Background

Purpose of Public Private Partnership Options Technical Memorandum - This memorandum describes what Public Private Partnerships (P3) are, identifies some of their key advantages and disadvantages, and provides a discussion of potential use of P3 in support of Orleans Water Quality and Wastewater Management program. P3 has the potential to save the Town substantial amounts of money through partnering with a private entity willing to provide equity for capital and operations and maintenance costs associated with wastewater treatment and effluent disposal, and septage management, in return for revenues generated by system customers. The opportunities for P3 in Orleans are focused on potential sewering of the Downtown Area.

2. Introduction

a. Definition of Public Private Partnerships (P3), Key Participants and Respective Roles.

Numerous sources define the term P3 as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance" (PPP Knowledge Lab). Because of the costs assumed by the private entity, the total cost of the project may be less than in a traditional project funded, constructed and operated solely by the public entity.

There are several key participants in a P3. These include the public entity (Town of Orleans) as the decision maker; the private developer or the equity partner; a financial advisor to develop financial model and/or possible payment structure; a legal advisor to develop the legal agreement; and a technical advisor to provide engineering and construction design and specifications and guidance on compliance requirements. Depending on the desires of the Town, the key participants may also include a facility operator.

b. **Overview of Use/Function of P3 in Water Quality and Wastewater Planning; Reducing Cost and Increasing Affordability**.

The primary use of P3 in water quality and wastewater planning is to introduce private equity into the construction and operation of the facilities, potentially reduce overall construction and operations costs, and thus reduce the outlay of public dollars and associated financial burden to ratepayers. Private equity in water quality and wastewater programs has been demonstrated to reduce costs due to lower labor costs (avoiding need to comply with Davis Bacon Act) and result in an expedited schedule. In addition to cost reduction, P3 has the potential benefit of reducing risk to the public entity. Depending on the final contractual agreement, it may move construction, operation and compliance risk to the private entity. All risks must be evaluated closely when considering a P3 to confirm suitability for a particular application.

c. **Design Build or Design Build Operate as Possible Procurement Option**.

Design-Build (DB) is a form of procurement in a P3. In a DB project, the Town would hire an entity to both design and construct the wastewater treatment and disposal facilities. There would be no separate bidding phase as typically occurs in the more traditional design-bid-build project where design specifications are prepared and put out for contractor bid. Design-build represents integration of engineering design, procurement and construction. In a design-build-operate (DBO) project, the DBO contractor would also operate the facility. The advantages of DB or DBO are that it typically reduces capital cost by an average of 21 percent and O&M costs by an average of 5 percent, and reduces the overall time for implementation by an average of 6-12 months. In Massachusetts, legislation must be approved before a community can proceed with implementation of DB or DBO with a value of $5MM or more. An application must be submitted to the office of the Inspector General. Overall the estimated time frame to obtain legislation, prepare a DB procurement package and solicit for a DB contractor is between 12 to 20 months.

3. Advantages and Disadvantages of P3

a. P3s have the potential to be advantageous to the Town, but there are also potential disadvantages. Both need to be fully vetted with the Town and its technical, legal and financial representatives before any commitments are made. Table 3-1 summarizes some of the anticipated advantages and disadvantages as they relate to potential P3 for the Downtown Water Quality and Wastewater Planning program. Specific advantages and disadvantages depend on the details of the contractual arrangement between the public and private entities.

Table 3-1 – Summary of P3 Potential Advantage and Disadvantages

Potential Advantages	Potential Disadvantages
Shared cost with private equity partner	Risk of developer default
Reduced program cost due to privatization incentives	Operations risk (equipment not maintained; performance standards not met, etc.)
Expedited schedule	Potential risk of rate increases due to risk premiums
Ownership retention	

4. Identification of Potential P3 Opportunities in Orleans

a. Exploration of Possible P3 Opportunities

AECOM conducted a workshop for the Orleans Board of Selectmen in February 2016 to provide an overview of P3 and also to discuss Design-Build as a procurement method (refer to Appendix A). The workshop generated substantial discussion, particularly because of interest on the part of a private developer owning property in the Downtown area to possibly develop a wastewater treatment and disposal system to serve his own development, and make excess capacity available to the Town.

The Consensus Plan calls for the provision of wastewater collection, treatment and disposal facilities to serve the approximately 350 properties in the Downtown Area. The currently proposed plan is for a collection system of gravity and low pressure sewers, a 250,000 gpd treatment facility at Overland Way, and groundwater discharge of treated effluent at a site to be confirmed. The estimated cost of that program is $XX MM. As noted above, the Town has been approached by a private developer with approximately 15 acres of property in the Downtown area. The Developer has proposed to construct a wastewater treatment and effluent disposal facility to serve his own development, and has indicated that some additional capacity may be available for additional wastewater flow from other Downtown properties. The Developer has indicated that he would need approximately 55,000 gpd (ADF) to serve his proposed development. The estimate for potential capacity to service all the properties in the Downtown area is 250,000 mgd. The additional capacity provided by the private developer for other Downtown flow would not be sufficient to handle the anticipated total flow required within the planning period. The Town would need to provide and additional treatment capacity of approximately 195,000 gpd to handle flow expected to be generated in the Downtown over the course of the planning period. Thus the Town plans to continue to explore opportunities with the private developer, while still continuing to plan for a Town-owned wastewater treatment and effluent disposal facility to serve a portion or all of the Downtown area.

b. Risk Assessment

Before proceeding with a P3, the Town needs to fully understand the potential risks and potential benefits. A thorough risk assessment is planned as part of the FY 17 work effort. Discussions with the private Developer are ongoing, and will provide valuable information to the assessment process. The Town also recognizes that other P3 opportunities may be identified, and thus the Town needs to independently consider what it believes the most important risk factors are for the Town and how the Town might want to structure any P3 agreement, regardless of developer. Among the risk factors that will be considered in greater detail are the following:

- Construction Risk;
- Operations Risk;
- Maintenance Risk;
- Change in Service Patterns;
- Reliability;
- Taxes and Inflation;
- Financing Risks;

- Changes in Laws/Regulations; and
- Force Majeure.

A key consideration for the Town as it goes through the risk assessment process is how to negotiate risk to the party that is best able to absorb it. The Town will need to identify risks, define them, develop mitigation and allocate responsibility. Identifying the risks and minimizing the unknowns is important as it will help reduce contingencies that add to costs, and result in greater impact to the rate payers.

5. Consideration of P3 in Developing Financial Model

a. P3 Results in Reduction in Total Program Cost to the Town.

Details of any possible P3 are not yet defined. As a representative case to demonstrate the financial benefit of a P3 to the Town, a P3 scenario in which the Downtown business property owners pay for the Downtown wastewater facilities was included in the financial model. The benefit to the Downtown business owners is the potential for increased development opportunities on their respective properties. The increased revenue potential would help to offset the costs they would incur to cover the cost of construction and operation. The business owners also benefit from the avoided costs to maintain and potentially replace on-lot systems to serve their properties, the costs of which range from XX to XX.

The financial model assumed a savings (to the Town) of XX percent associated with P3 implementation. This savings translates to reduced cost to the Town and greater affordability of the program to ratepayers.

6. Conclusion

The Town is interested in learning more about the potential for P3 as part of the Water Quality and Wastewater Management program. The Town intends to continue meetings with the Developer to gather additional information and discuss potential for potential opportunities for P3. In addition, the Town plans to conduct a Risk Assessment Workshop to identify and evaluate potential risks and risk responsibility associated with implementing a P3. The Town will also begin to explore potential mitigation strategies for risks so they can make informed decisions going forward.

Appendix A

Design-Build Project Delivery Presentation to the Board of Selectmen – February 2016

Orleans
Massachusetts

Town of Orleans, MA
Design-Build Project Delivery
February 2016

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Topics of Discussion

1. What is Design-Build?
2. Design-Build Advantages and Disadvantages
3. Design-Build Operate
4. P3 & Public-Private Partnerships

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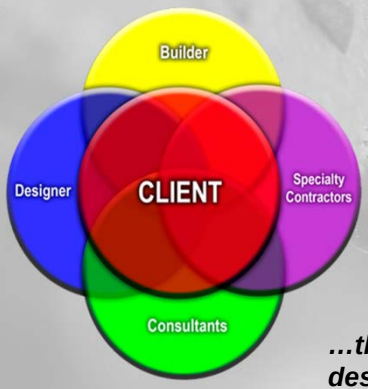
What is Design-Build?

Design-Build is a method of project delivery in which ***one*** entity (design-builder) forges a ***single*** contract with the Owner to provide for architectural engineering design services and construction services



…this is complete "integration of design/engineering/construction" and NOT simply "assigning tasks"!

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Design-Build is becoming increasingly popular among Owners and Operators of water and wastewater systems.

So….what distinguishes Design-Build from other delivery methods?

- **Single-Point Accountability**
- Value-Based Selection
- **Time and Cost Savings**
- **Early Knowledge of Total Costs**
- Established Relationships w/Contractors

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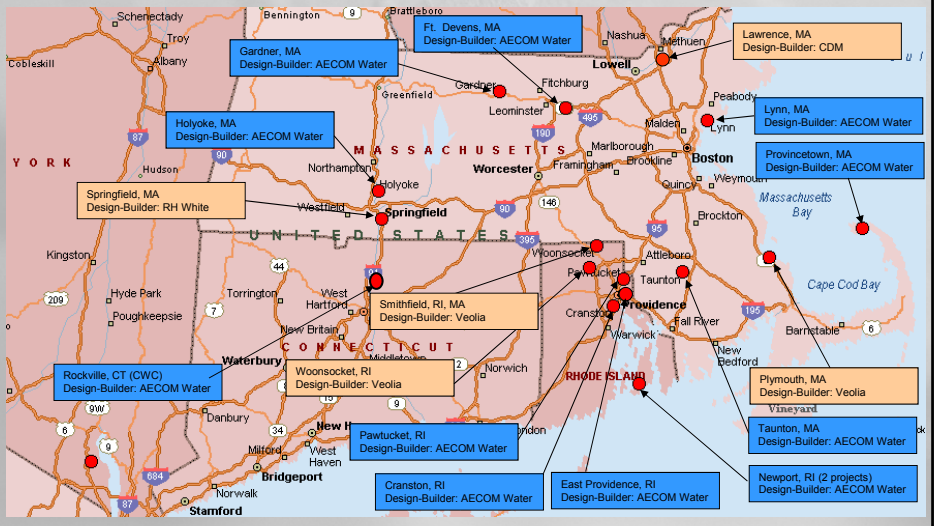
AECOM has done 75% of the Municipal Design-Build Projects in New England

AECOM Water Projects = Other =



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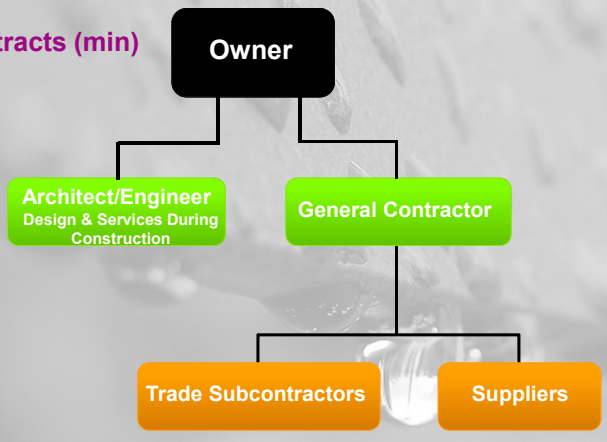
Traditional Project Delivery Method:
Design-Bid-Build (DBB)

Two Contracts (min)



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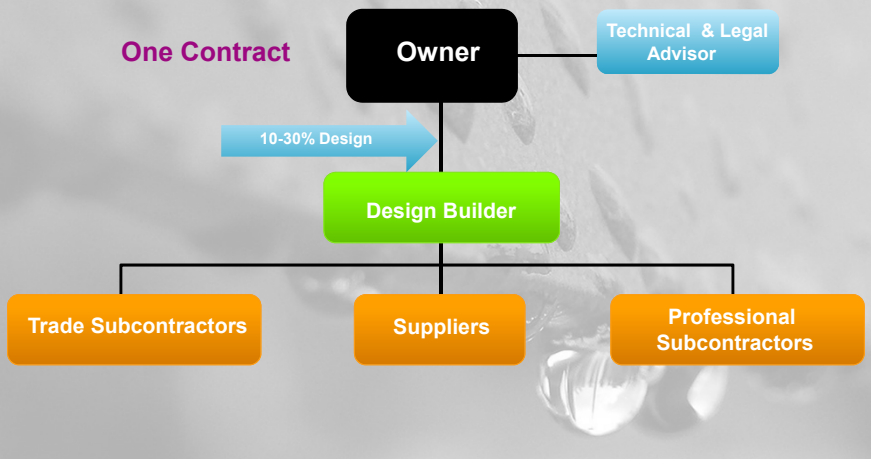
Alternative Project Delivery:
Fixed Price Design-Build (DB)



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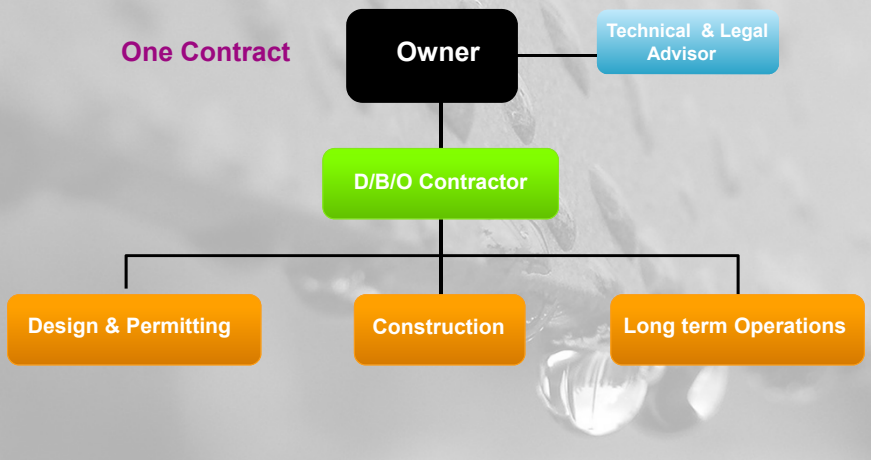
Design Build Operate:



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General Timeline Considerations

- Special legislation required (3-6 months typical)
- Owner's Agent
- Procurement development (3-6 months)
- Procurement will identify Prescriptive/Performance-based
- Typically retain Engineering and Legal Services
- DB procurement period (4-6 months)

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Advantages of Design-Build

- **Single Point Accountability**
- Collaboration: Open sharing of info and data
- Have Builder/Vendors Involved in Design Process
- Speed of Delivery
- Early Price Certainty
- Fewer Change Orders and Claims
- Lower Costs (Lower capital/financing)
- No "Forced" Relationships
- Shifting of Risk to DB Contractor
- Ability to Fast Track

Advantages of Design-Bid-Build

- Familiarity with method
- Lower procurement cost
- Owner has control of design/construction

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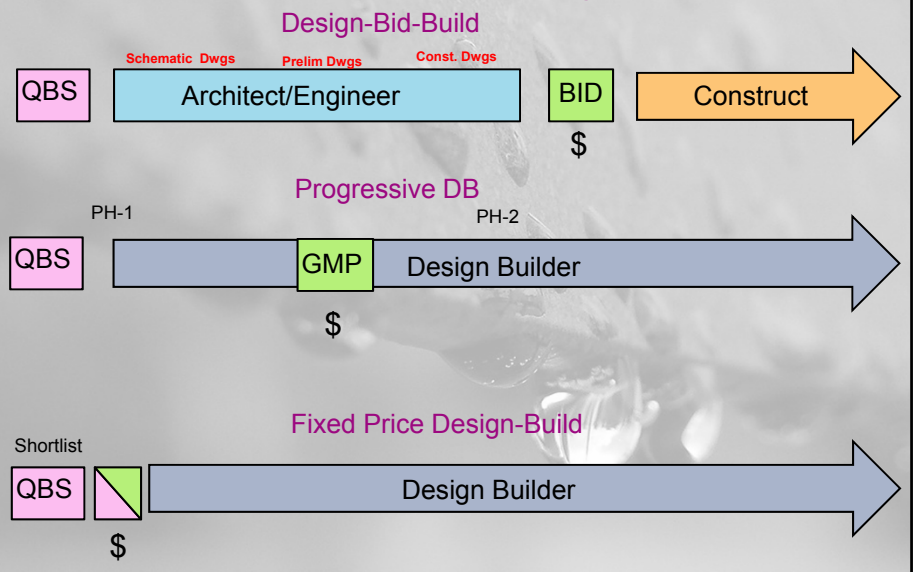
Establishment of Cost Certainty



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Traditional Risk Using Design Bid Build

Risk	Town	DB/O
Construction Costs Exceed Budget	√	
Subsurface conditions	√	
Subsurface Conditions identified during due diligence (ex. Ledge, hazardous materials)	√	
Permitting Risk (delay, non-issuance, new terms)	√	
Schedule Risk (fines for not meeting consent order dates)	√	
Design Risk (Facility will work)	√	
Disputes Among Designer, Builder, Operator	√	
Electricity Rates	√	
Regulatory Compliance (fines for violation)	√	
Capital Risk – risk of deferred maintenance	√	
Change in Law	√	
Inflation (Service Fee escalates based on CPI and ECI)	√	
Uncontrollable circumstances	√	

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Shifting of Risk with DB or DBO Contractor

Risk	Town	DB/O
Construction Costs Exceed Budget		√
Subsurface conditions (after vendor completes due diligence)		√
Subsurface Conditions identified during due diligence (ex. Ledge, hazardous materials)	√	
Permitting Risk (delay, non-issuance, new terms)		√
Schedule Risk (fines for not meeting consent order dates)		√
Design Risk (Facility will work)		√
Disputes Among Designer, Builder, Operator		√
Electricity Rates (maximum usage guaranteed)	√	
Regulatory Compliance (fines for violation)		√
Capital Risk (no deferred maintenance)		√
Change in Law	√	
Inflation (Service Fee escalates based on CPI and ECI)	√	
Uncontrollable circumstances	√	

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Design-Build-Operate Procurement Benefits

- Competition on “O” and not just “D” &“B”
- One company provides for aggregation of services under one full service contract
- Cost savings. SRF funding still used for DB phase financing
- 10-20 yr contract term for operations & management plus renewal at Town option
- Optimized balance between capital and operating costs
- Rate stabilization – fixed and predictable short and long term costs
- Town maintains ownership and sets rates

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Innovation Leads to Potential Design-Build Cost Savings

Design-Build Project	Owner's Budget	DB Proposal Cost	% Savings
Hialeah, FL	$62.00	$55.00	11.3%
Brownsville, TX	$28.70	$22.71	20.9%
Newport, RI	$76.00	$63.00	17.1%
Carroll County, MD	$30.00	$26.30	12.3%
Cranston, RI ●	$29.60	$15.70	47.0%
Fort Devens, MA	$13.00	$10.00	23.1%
Lynn, MA ●	$20.00	$14.20	29.0%
Provincetown, MA ●	$16.00	$14.70	8.1%
Pawtucket, RI ●	$55.00	$45.00	18.2%
Holyoke, MA ●	$20.70	$17.70	14.5%
E. Providence, RI ●	$65.86	$52.20	20.7%
Woonsocket, RI ●	$54.00	$33.96	37.1%
Davis, CA	$76.00	$65.28	14.1%
Average Savings from AECOM Design-Build Projects			21%

● Design Build Operate

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Introduction

D • Design

B • Build

F • Finance

O • Operate

M • Maintain

P3 Foundations

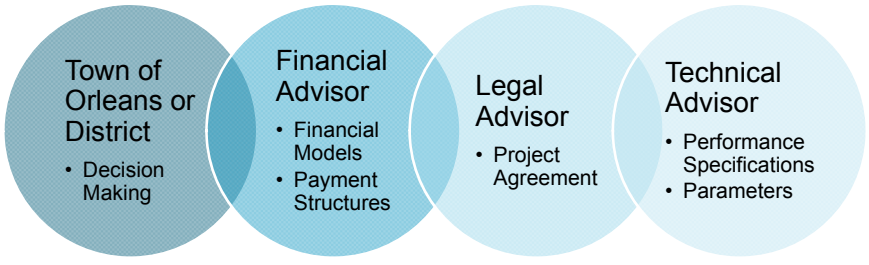
Risk Transfer
- Public → Private
- Short Term → DB
- Long Term → FOM

Retained Ownership
- Public sector retains ownership

Performance Based
- Private sector's performance constantly measured

Public/Private Equity
- P3s may include one or both

Key Participants



P3 Feasibility

- Risk Assessment and Value for Money
- Industry Outreach
  - Objective: input from and interest of potential participants on the project.
  - Targets may include designers, contractors, operators, maintainers, lenders and financial investors.
  - Mechanism: Request for Letters of Interest (RFLOI).
- Definition of Scope and Bid Packages
  - Overall scope of work (SOW) and potential packages are defined based on Town needs and industry input.
- Procurement Options Recommendation
  - Based on risk, VfM, industry outreach and SOW.
  - Recommendation for Procurement Option that WORKS.
  - May include Traditional DBB, DB or P3.

Risk Allocation and Value for Money

Risk Assessment Process

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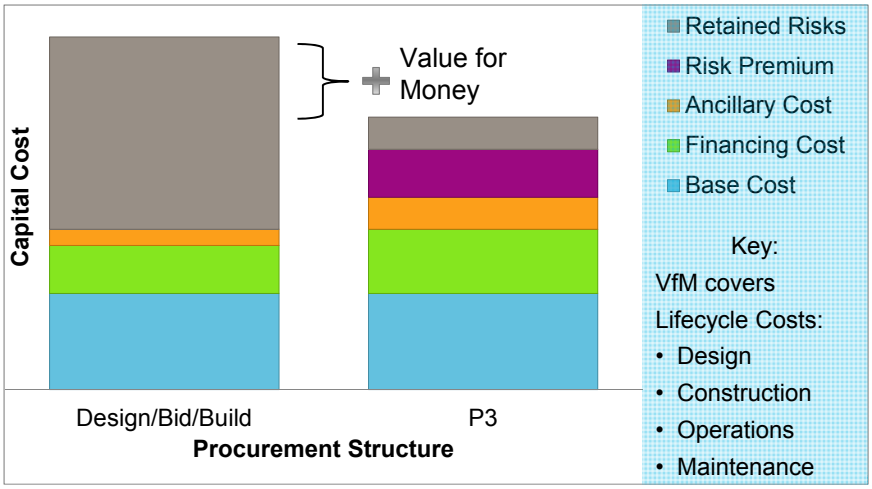
Risk Allocation and Value for Money



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Typical P3 Contract Structure

Revenue Concession	Availability Payment
Revenue risk shifted to private sector	Revenue risk stays with public sector
Requires demonstrable revenue stream	No need for revenue stream
Failure to achieve projected revenue may cause private sector's bankruptcy	Failure by public sector to appropriate availability payment may cause breach of contract
Performance measured through operations and maintenance standards	Performance measured through performance and availability standards
Failure to perform triggers default	Failure to perform triggers deductions from availability payment and may lead to default of agreement
Industry-wide shift to availability payments	

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Measuring and Ensuring Long-Term Performance

- Availability Payment Structure
  - Availability Based Parameters
    - Based on the availability of the services provided without interruption.
    - Downtime is allowed:
      - Depending on redundancy and/or during non-peak hours
      - For Routine Maintenance
    - Persistent breach leads to default.

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Measuring and Ensuring Long-Term Performance

- Availability Payment Structure
  - Performance Based Parameters
    - Based on the performance and condition of the facility and systems.
    - Performance failure considered less serious than availability failure as it is based on individual system performance rather than whole facility availability.
    - Performance deductions lower than availability deductions, but still aggressive enough to incentivize proactive and routine maintenance.
    - Persistent breach leads to default.

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Advantages and Disadvantages

- P3 as a DB/O
  - Advantages
    - Encourages competitiveness among bidders
    - Allows for Town control over tariffs and process
    - Allows for added value through efficiencies and innovations
    - Risk Transfer
  - Disadvantages
    - Longer procurement process
    - Higher up-front cost for Town (legal & financial)
    - Without a financing component, more difficult to incentivize operator to perform well

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Summary of Benefits

Issue	Design-Bid-Build	CM-at-Risk	Design-Build and DBO
Fast-Track Procurement and Schedule	No	Yes - Limited	Yes, potential 6-12 month overall savings
Single Point of Responsibility	No, owner must mediate between engineer and builder and cover the cost of resulting change orders		Yes, resulting in minimal change orders
Potential for innovative ideas and resulting cost savings	Locked into original engineers ideas. Actual costs are not known until late in the process		Ideas and costs are established competitively and early

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Preliminary Options

Option #	Plan	Description	Wastewater Plant Location	WWTP Owner	Collection System Owner	Disposal Location	Disposal System Owner	Source of Capital	Revenue Sources for Remaining Debt
1	Public (Municipal)	Conventional Public	Overland Road	Town	Town	Parcel 1/1A	Town	**Treatment/Disposal**	**Treatment/Disposal**
								State SRF	Special assessments
								Grants to reduce loan	Connection fees
								Debt foregiveness	Taxes
								Collection	**Collection**
								State SRF	Special assessments
								Grants to reduce loan	Connection fees
								Debt foregiveness	Taxes
2	Private	Private Entity	Old Colony Road	Private	Town	Maketplace	Private	**Treatment/Disposal**	**Treatment/Disposal**
								Private capital	Private revenue
								Collection	Capital recovery Fees to Town
								Municipal SRF	**Collection**
								Grants to reduce loan	Special assessments
								Debt foregiveness	Connection fees
									Taxes
3	Public - Private	PPP	Overland Road	Town	Town	Maketplace Parcel 1/1A	Public & Private	**Treatment/Disposal**	**Treatment/Disposal**
								State SRF	Special assessments
								Grants to reduce loan	Connection fees
								Debt foregiveness	Taxes
								Private capital - Flow based	
								Collection	**Collection**
								Municipal SRF	Special assessments
								Grants to reduce loan	Connection fees
								Debt foregiveness	

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Questions?