

Work Study on Expedited Purified Water Program Dual Track Procurement



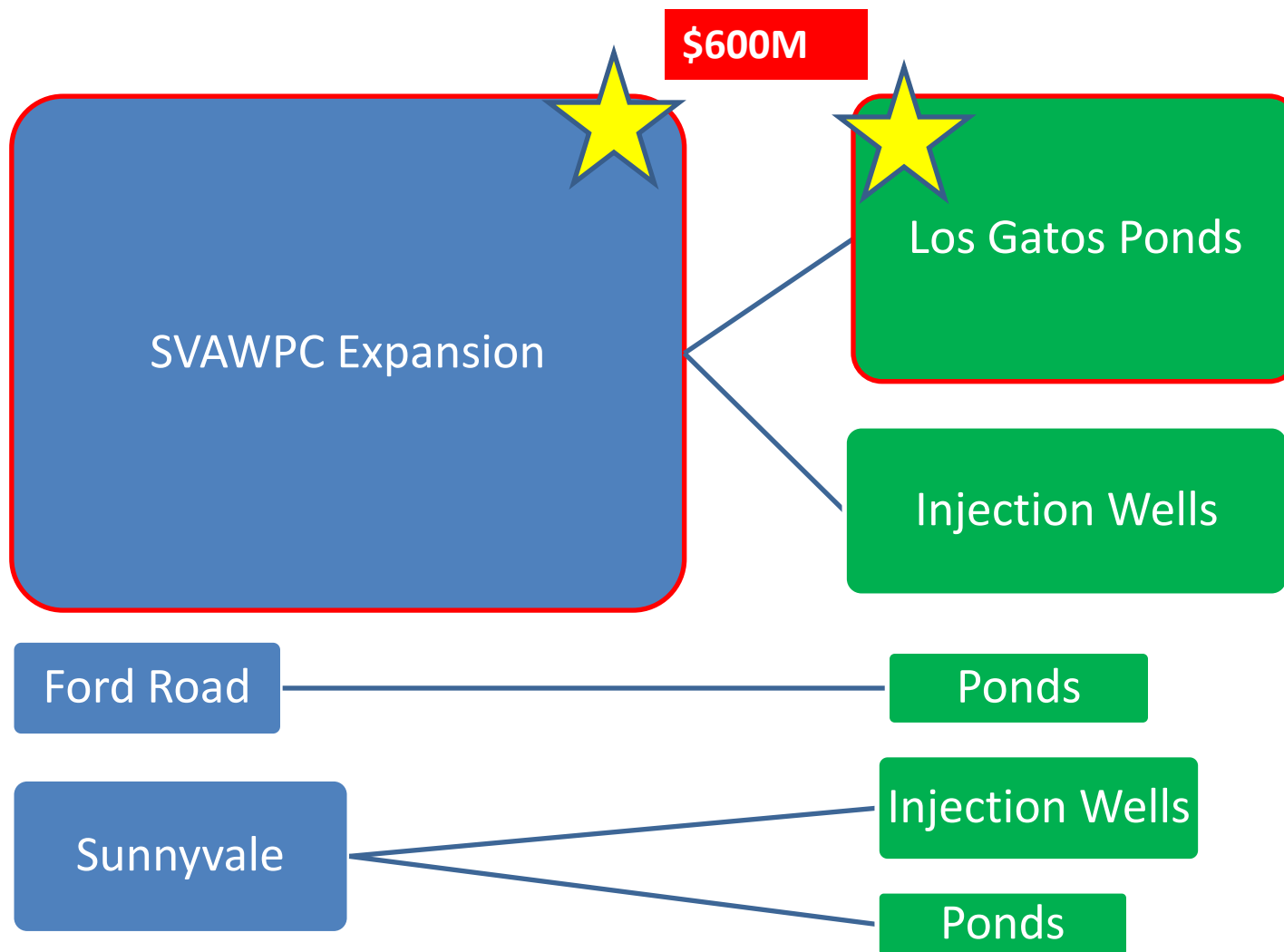
Two Project Delivery Methods

1. Progressive Design-Build (PDB) and Public-Private Partnership (P3) project delivery methods represent departures from the District's historical design-bid-build approach.
2. Identified for their ability to deliver the Program faster, transfer project risks and at lower costs.
3. Selecting one path prior to releasing Request for Proposal is highly recommended.

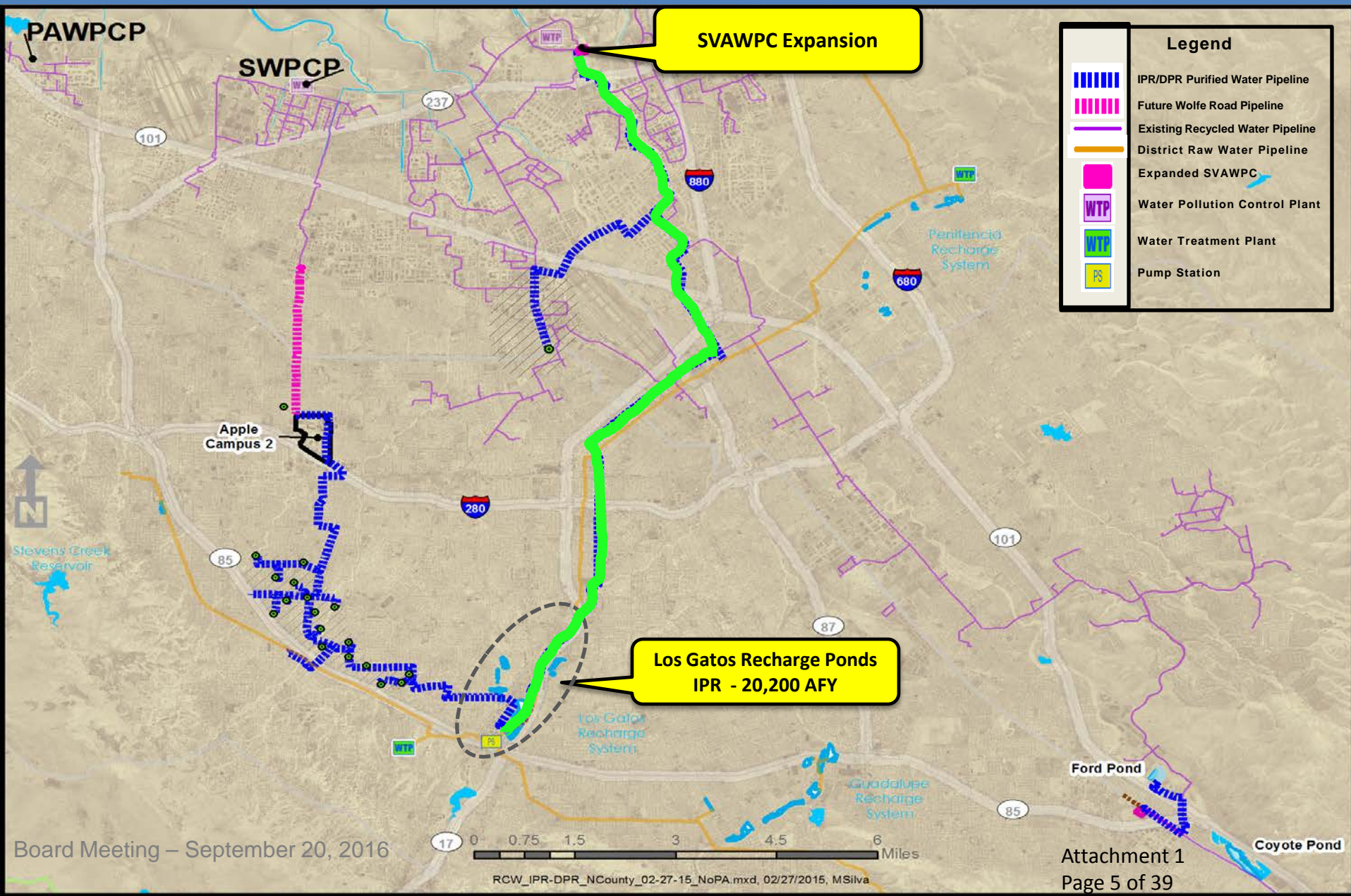
Work Study Outline

1. Program Background
2. Overview of Delivery Methods Under Consideration
3. Staff Assessment of Delivery Methods
4. Staff Recommendation
5. Board Ad Hoc Recycled Water Committee Comments from September 7, 2016 Committee Meeting

Potential Program Elements



RFQ Components – Group A



Dual Track Procurement History - 1

Calendar Year 2015

1. Alternative project delivery methods available to expedite potable reuse implementation.
2. Board supported dual track approach to determine best method.
3. Dual track respondents expressed concerns prior to release of RFQs.

Progressive Design-Build	Public-Private Partnership (P3)
Collaborative development of project concept.	
Costs developed through an open book process.	
Guaranteed maximum price for construction to be approved by Board.	Water availability agreement negotiated and approved by the Board.
Capital costs are negotiated between Owner and DB entity.	Capital and O&M costs are negotiated between Owner and P3 entity.
District provides 100% funding, integration of program elements and O&M.	P3 provides 70% of funding, integration of program elements and O&M; 30% is Owner pay-go.

Dual Track Procurement History – 2

Calendar Year 2016

1. Strong RFQ response in April.
2. Shortlists published in June (highlighted in yellow).
3. Recycled Water Committee visited San Diego County Water Authority on July 19;
4. Staff held internal P3/PDB workshop in August.
5. Recycled Committee work study session held on September 7.
6. Recycled Water Committee to visit City of Stockton on September 28.

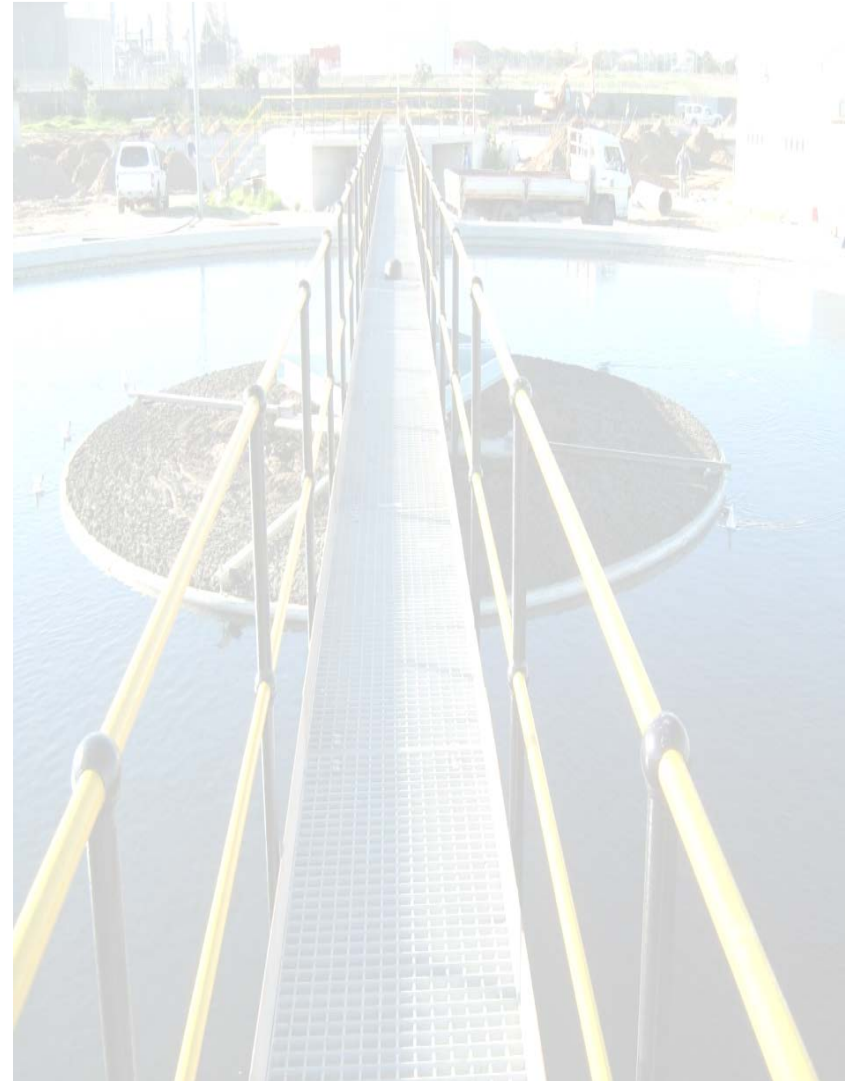
Progressive Design-Build		Public-Private Partnership (P3)
SVAWPC Expansion	Purified Water Pipeline	
Filanc-BV		SJWC (Filanc-BV, SJWC & Citigroup Global Markets)
CH2M	CH2M	Table Rock (CH2M & Goldman Sachs)
Fluor (Kiewit)	Fluor (ARB)	Fluor (ARB/Kiewit, SUEZ & Aberdeen)
CDM-PCL	Garney Pacific (Lockwood)	PERC Water (Layton, Tetra Tech & Stonepeak Infrastructure)
MWH/Webcor	Ranger Pipelines (HMM)	Poseidon (Sacyr, Arcadis & Poseidon)

Overview of Delivery Methods

By: Jill Jamieson

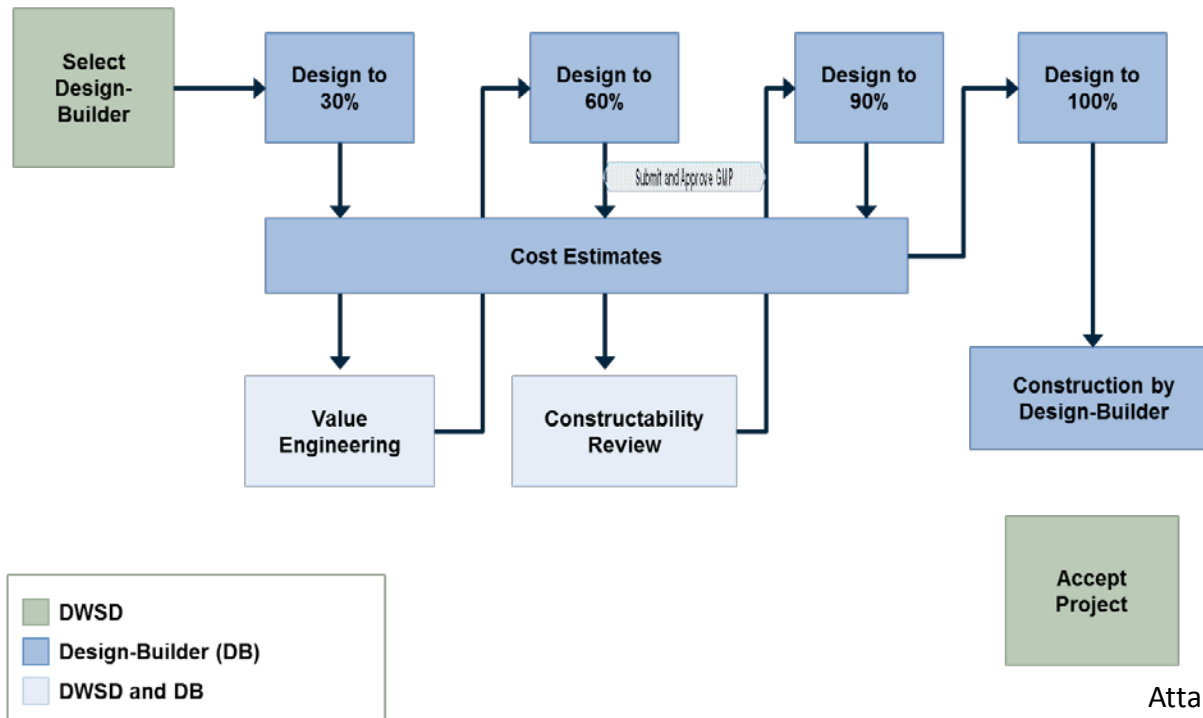
Best Practice: *Selecting Contracting Modalities*

- There are no absolute truths when it comes to selecting a contracting modality
- Usually not an “either/or” decision. Typically the focus is on tailoring a structure that best meets objectives and optimizes value-for-money for the owner
- Best practice evaluation methodologies involve both **qualitative** and **quantitative** comparison of options; however, determining the optimal contracting structure is not a perfect science, nor without its pitfalls
- Challenges involved in *high-level assessments*
- Suggestions:
 - Beware of biases
 - Clarify the comparison
 - Don’t let vernacular drive the decision



Progressive Design-Build (PDB)

- PDB is popular and increasingly standardized delivery structure for water utilities
- Collaborative approach to design, while likewise allowing for cost and schedule risk transfer to private partner
- Low procurement risk (“less investment in procurements and more in projects”)
- Open-book pricing and off-ramp option to ensure competitive pricing
- Incentivized performance and risk sharing



Progressive Design-Build (PDB)

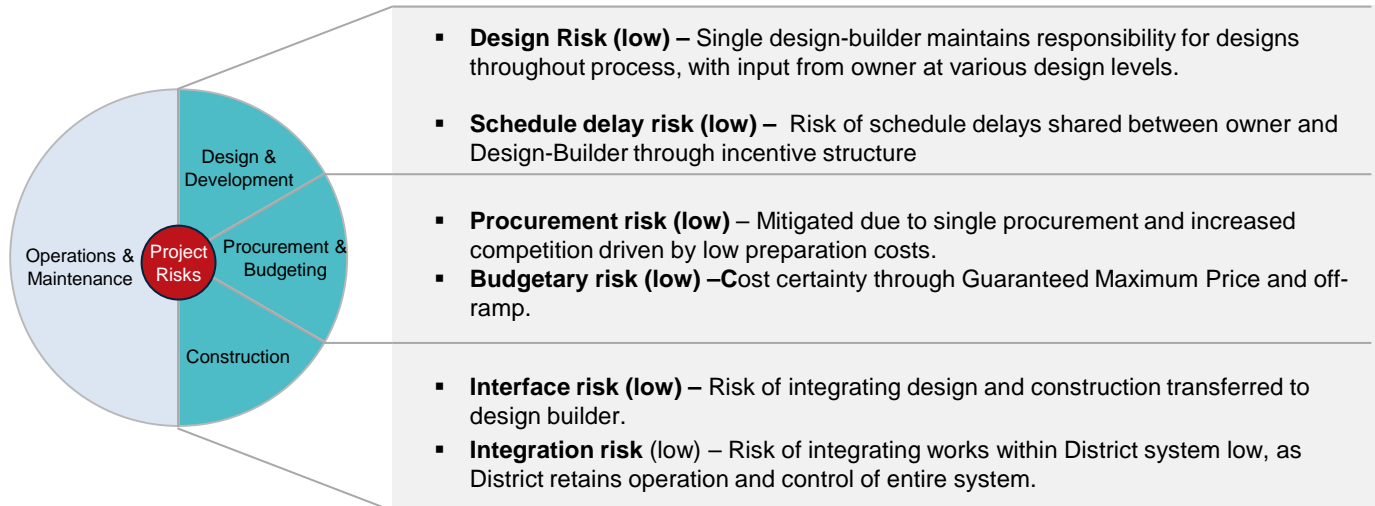
Advantages

- Compressed
- Cost analysis of options available as project progresses; opportunities for value-engineering
- Transfer of cost and schedule risk to contractor
- Maximizes owner flexibility, involvement and system control

Disadvantages

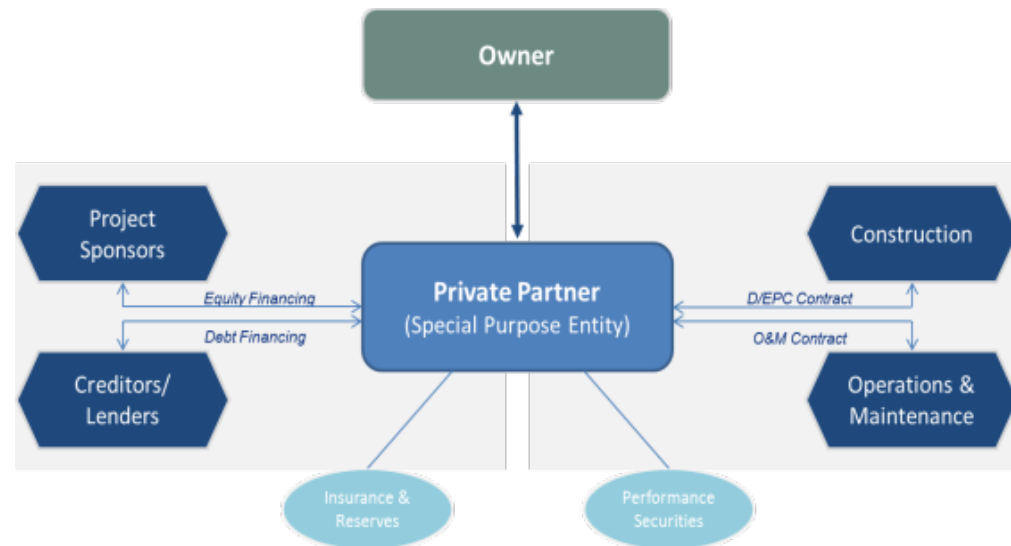
- Cost for construction not known at the time of initial contract signing
- Cost is determined through combination of negotiated and competitive processes
- Asset life-cycle maintenance not addressed

Risk Considerations



Design-Build-Finance-Operate-Maintain (DBFOM)

- DBFOM is a long-term contract between a public agency and a “private partner” for the design, construction, financing, operation and/or maintenance of an infrastructure facility.
- Terms and conditions of agreement can vary greatly and will define scope of responsibilities, as well as level of risk transfer to private partner.
- Addresses life-cycle needs of the asset.
- Significant (not total) cost, schedule and performance risk transfer to private partner. District does retain significant risk, as well as contingent liabilities.
- District’s proposed approach (introducing a “progressive” element into the DBFOM) is innovative, but not industry standard.



Design-Build-Finance-Operate-Maintain (DBFOM)

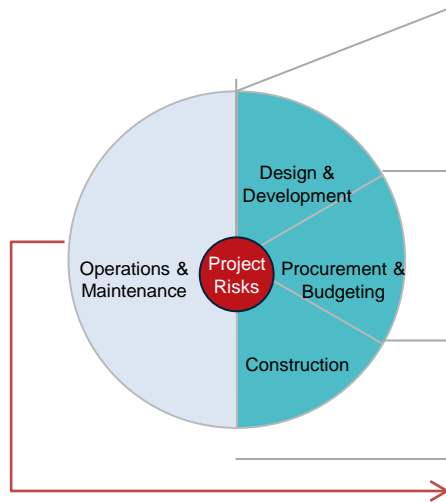
Advantages

- Life-cycle O&M (including rehabilitation) addressed by private partner;
- Transfer of cost and schedule risk to private partner
- Lenders' reps provide additional oversight
- Hand-back conditions secured

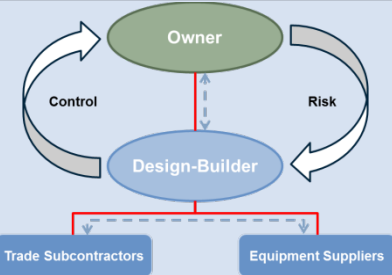
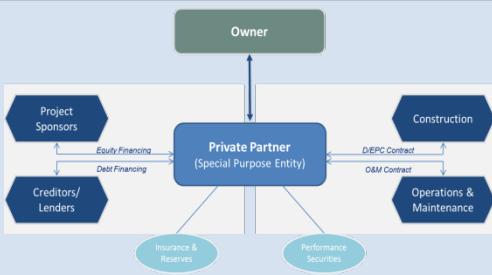
Disadvantages

- Higher cost of capital than public finance;
- More complex agreement due to financing provisions
- More complex agreement requires more sophisticated contract governance and oversight

Risk Considerations



- **Design Risk (low)** – Single design-builder maintains responsibility for designs throughout process, with input from owner at various design interventions.
- **Schedule delay risk** – Risk of schedule delays mostly transferred to private partner (or shared);
- **Procurement risk (moderate)** – Single procurement for asset life-cycle create some savings, but .procurement process can be complex, lengthy and costly..
- **Budgetary risk (low)** – District's life-cycle budget .obligations established in P3 agreement
- **Interface risk (low)** – Risk of integrating design and construction transferred.
- **Integration risk (moderate)** – Multiple operators and long-term obligations deriving from P3 contract could impact District control and management of water system.
- **O&M Budgetary risk (low)** – Mostly transferred to private partner.
- **Performance Risk (low)** – Prescribed performance levels and bonding.
- **Technology Risk (low)** - Transferred to private partner
- **Handback Risk (low)** – prescribed levels and bonding ensure handback standards

	PDB		P3 (PDBFOM)
Project Structure			
Risk Considerations	<ul style="list-style-type: none"> • Cost risk transferred through progressive design process, open book and off-ramp option • Most (not all) construction cost overrun risk transferred to design-builder through GMP • Most (not all) schedule risk transferred to design-builder through incentive structure • District retains life-cycle performance and management risk • Integration risk minimized • Minimal procurement risk and cost 		<ul style="list-style-type: none"> • Unique “progressive approach” to DBFOM could cause some pricing risk, but alignment of construction and operating considerations should generate some efficiencies. • Most (not all) construction cost overrun risk transferred to design-builder through GMP • Most (not all) schedule risk transferred to design-builder through incentive structure • District transfers most (not all) life-cycle performance and management risk • Integration risk accentuated • Significant procurement risk and cost
Advantages	<ul style="list-style-type: none"> • Accelerated implementation timeline • Integrated design and construction • Low cost of finance 		<ul style="list-style-type: none"> • Third party financing reduces credit impact of project for District • Life-cycle O&M addressed by private partner • Additivity and innovation
Disadvantages	<ul style="list-style-type: none"> • District bears life-cycle asset risk • Full responsibility for asset ownership risks remains with District (including deferred maintenance, technology, etc.) • Limited flexibility due to long-term contract 		<ul style="list-style-type: none"> • Higher cost of capital than public finance; • More complex agreement due to financing provisions • Need for more sophisticated contract governance and oversight

Risk Transfer Considerations

Key Risk	PDB	PDBFOM
	Progressive Design-Build	Progressive-Design-Build-Finance-Operate-Maintain (30 years)
Finance	District	Private (or shared)
Design Risk	Private/Shared	Private/Shared
Schedule Risk	Private/Shared	Private/Shared
Cost Overruns	Private (with some exceptions)	Private (with some exceptions)
Operating Risk	District	Private
Ongoing Maintenance	District	Private
Rehabilitation	District	Private
Technology	District	Private
Asset life-cycle	District	Private
Handback	District	Private

Some Key Considerations for the District

1. Key risks (such as cost overruns and schedule) can be / will be transferred to the private partner under both PDB and DBFOM.
2. Is there value in “bundling” project elements into a single contract or is it better to separate them? Can risks be isolated and ring-fenced or is there potential for integration issues?
3. Operations and Maintenance:
 - Potential for unnecessary redundancies
 - Does the District have the O&M expertise? Does a private operator bring specialized skills not readily available in the District?
 - Is there potential for efficiencies (either through public or private operation)
 - Can/will the District efficiently address life-cycle maintenance?
4. Balance Sheet and Credit Impact of District obligations
5. Under a P3, would the private partner bring something to the table (e.g., permitted project, water rights, rights of way) that the District needs?
6. Procurement risk

Take-aways from “PDB or P3(PDBFOM)?” Staff Workshop

- There is no one right way.
- What does the Board want to achieve?
- Align your choice with District’s objectives.
- Remain a “doer” or become a “regulator?”
- Potential implications of privatization in a predominantly public agency region?
- The Board must be the District’s political champion.

Staff Assessment: Aligning Objectives to Solution

District's Objective
Speed of Program Implementation
Quality of Facilities and Product Water
Control (System Integration)
Project Life-Cycle Cost
Overall District Success

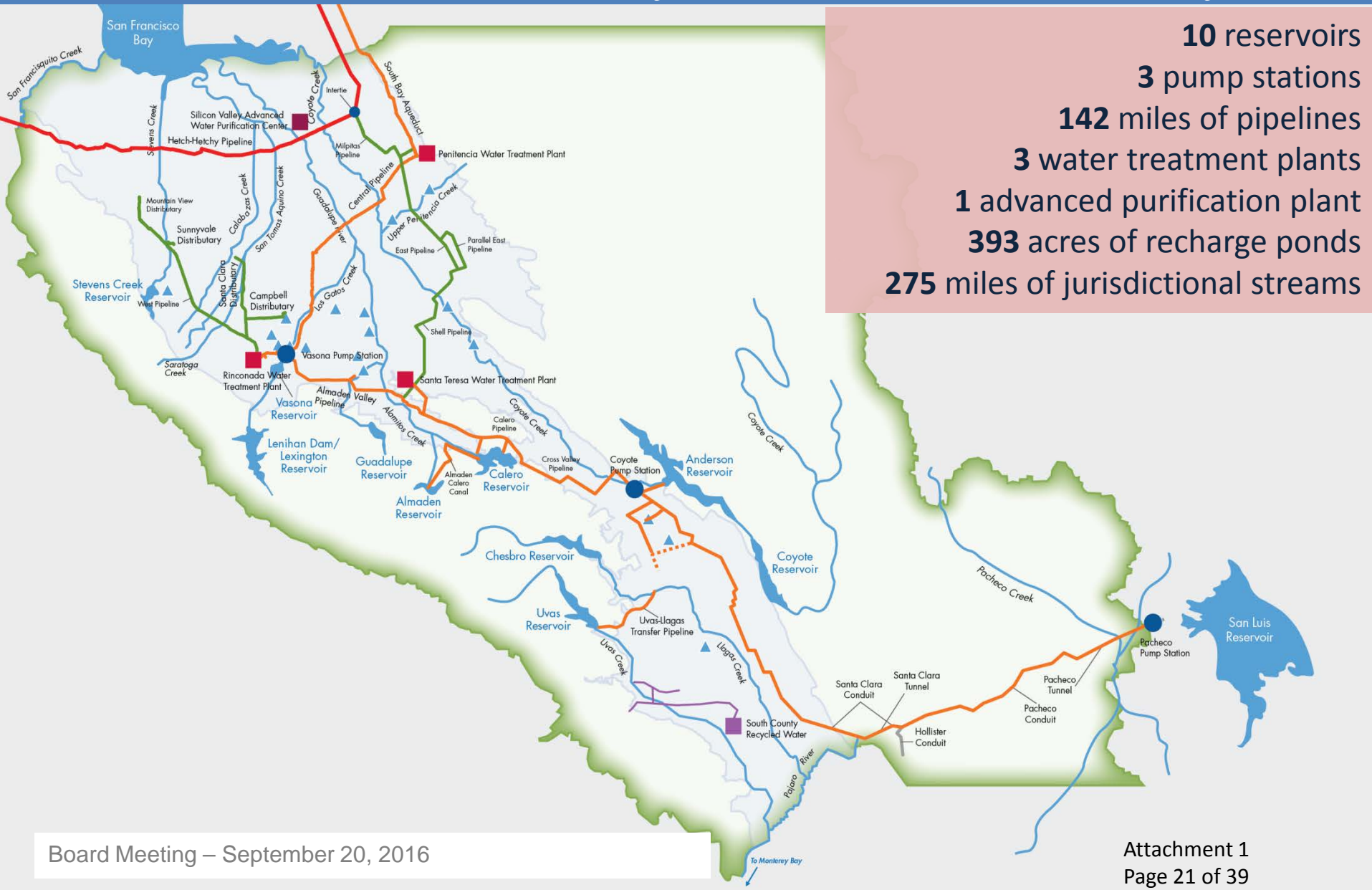
Staff Assessment of Key Objectives – 1 and 2

District's Objective	Progressive Design Build	P3 (PDBFOM)
1. Speed	Less complex procurement; May result in quicker start to construction.	Financial incentives to finish construction quickly.
2. Quality	<ol style="list-style-type: none">1. Strong owner input on design features;2. District owns and pays for quality performance.	<ol style="list-style-type: none">1. P3 performing O&M creates incentive for reliable facility/life cycle mgmnt;2. District pays premium for quality performance/risk transfer.

Staff Assessment of Key Objectives – 3

District's Objective	Progressive Design Build	P3 (PDBFOM)
3. Control (System Integration)	<ol style="list-style-type: none"> 1. Effective integration of new facilities with District system: <ul style="list-style-type: none"> • Staff at 8MGD SVAWPC • Points of delivery to recharge ponds • Points of delivery to raw water system (future DPR) 2. Ability to increase/decrease production cost-effectively. 3. Flexibility in addressing many unknowns in future. 4. District remains a “doer.” 	<ol style="list-style-type: none"> 1a. Integrating private O&M functions with District staff at points of delivery. 1b. Public O&M at SVAWPC; private O&M next door. 2. Scaling production up/down an essential aspect of P3 contract. 3. Locking in a P3 contract may limit flexibility. 4. District takes on role of “regulator.”

Water Supply from Imported Sources and Local Reservoirs Intricately Connected in County



Integrated Operations Requires Flexibility

- Imported water and local water supply recharge ponds and treatment plants
- Close coordination essential
 - WTP flows fluctuate by 25 MGD daily
 - Recharge ponds absorb flow
 - Daily adjustments by field operators
 - Events like San Luis Low Point affect planned operation
- FAHCE will affect stream operation
- Flexibility is key to system operation
- Potable Reuse water - integral to District system and water supply operations

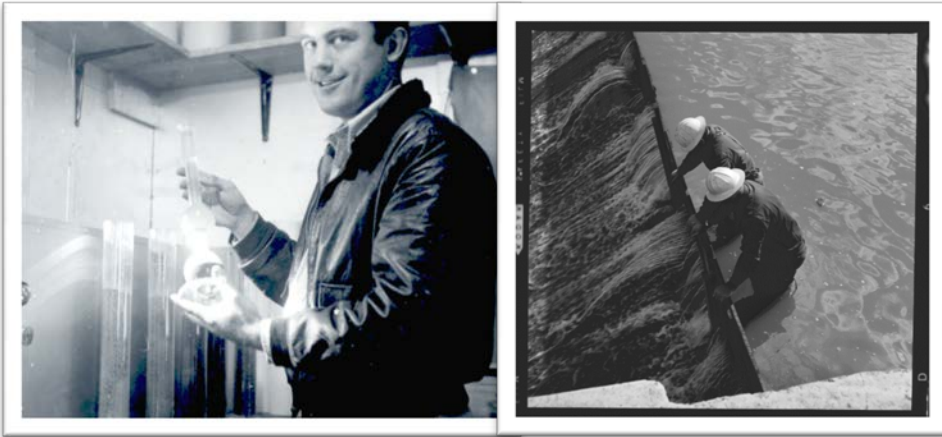
Regulating Page Ponds



Rinconada Water Treatment Plant



80 years of O&M experience



Membrane Operator Association Training at SVAWPC

Board Meeting – September 20, 2016

- 1930s: O&M of recharge ponds
- 1960s: O&M of water treatment plants
- 1970s: O&M of pump stations
- 1980s: O&M of San Felipe System (USBR facility)
- 2000: Operation of SFPUC-SCVWD Intertie
- 2014: O&M of SVAWPC
- O&M supported by engineering and technical expertise
 - Process engineering
 - Electrical, SCADA

Public Acceptance of Potable Reuse – District Reputation

In 2014, WaterReuse Research Foundation analyzed public perception about Potable Reuse and found:

Those with positive attitudes toward their water agency are more accepting of Potable Reuse.

Risk of taking wastewater, purifying it, and recharging it into the our groundwater basin is on the District (non-transferrable).

District is groundwater manager for quality and quantity.



Staff Assessment of Key Objectives – 4

District's Objective	Progressive Design Build	P3 (PDBFOM)
4. Cost	<ol style="list-style-type: none"> 1. Full transparency/control over construction cost. 2. Cost-effective integration of new facility with O&M staff from District's other facilities. 3. District must hire more O&M staff. 4. Long-term O&M subject to annual budgets. 	<ol style="list-style-type: none"> 1. P3 O&M agreement is key incentive for reliable facility. 2. District pays premium for transferring O&M/life-cycle risks. 3. District must hire or re-train staff to monitor/regulate P3 performance. 4. O&M agreement assures reliable operations throughout contract term.

Financial Modeling Assumptions - Base Case

	PDB*	P3*	Comments
Design & Construction Budget (expansion & pipeline only)	\$600M	\$600M	Assume 30% funded by pay-go and 70% by debt issuance for both PDB & P3
Operating & Maintenance Budget	\$11.8M	\$11.8M	Annual esc. 3%, 30 years O&M period; assumes 100% plant capacity utilization
Debt Rate	5.50%	6.60%	P3 rate higher due to credit spread (0.80%) and AMT penalty (0.30%) vs. District AA tax-exempt rate
Equity Rate	--	10%	Based on SDCWA negotiated rate ~9.6%
Debt to Total Capital	100%	90%	
Weighted Average Cost of Capital	5.5%	6.94%	
Commercial Operations Date	2024	2024	
Revenue Coverage	2 x	1 x	P3 pmt is an operating/maint. expense which requires 1 x revenue coverage
Credit Rating	AA	BBB	Reflects difference between District's credit rating and the assumed credit rating of Special Purpose Entity delivering the Program.
Discount Rate	5.50%	5.50%	

* Costs stated in 2016 dollars

Scenario 1:

O&M Cost Differential for P3

Assumptions:

Construction Cost	Same in both scenarios
O&M Cost	P3 is 20% higher*
Schedule	No delay in start of operations

NPV cost (negative) vs benefit (positive) of P3 vs PDB (\$M)



\$116M Cost
Scenario 1

* The present value cost of P3 versus PDB in this scenario reflects the higher financing costs of the P3 entity, and economies of scale in operations achieved in the PDB alternative (but not in the P3).

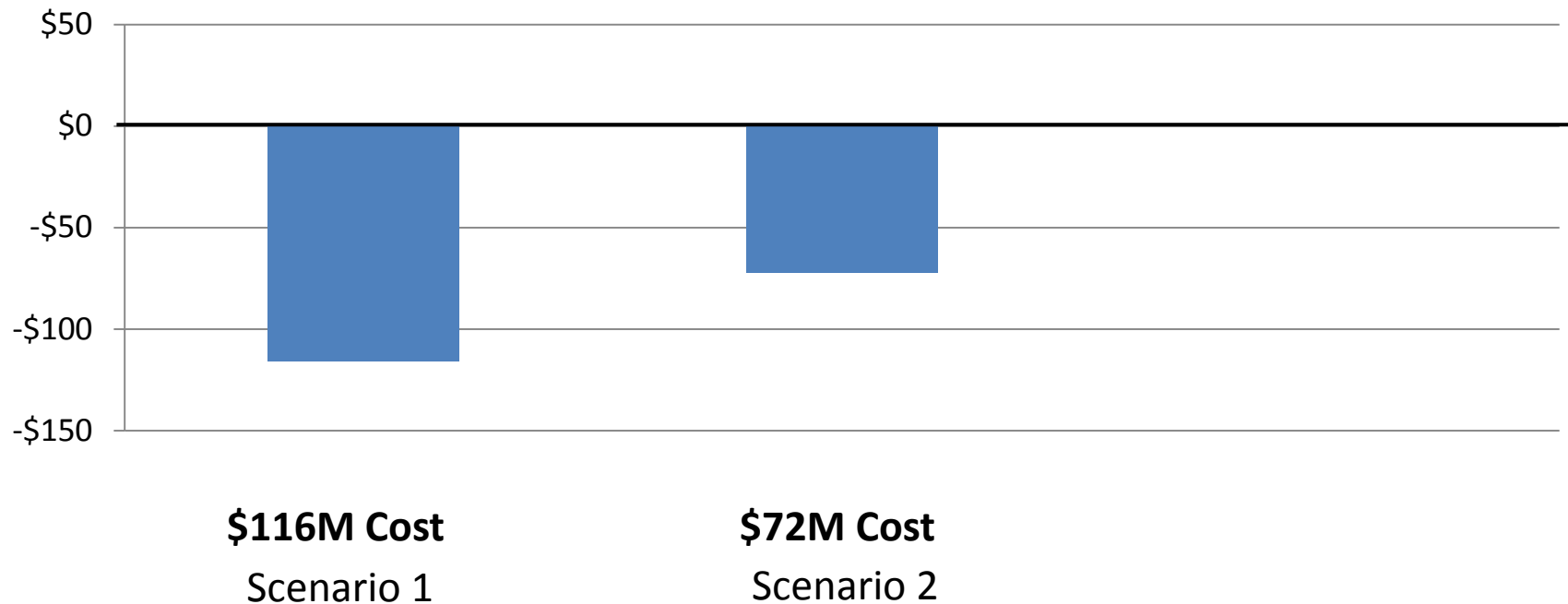
Scenario 2:

No Cost/Operation/Schedule Differences

Assumptions:

Construction Cost	Same in both scenarios
O&M Cost	Same in both scenarios
Schedule	No delay in start of operations

NPV cost (negative) vs benefit (positive) of P3 vs PDB (\$M)



Note: The present value cost of P3 versus PDB in this scenario reflects the higher financing costs of the P3 entity.

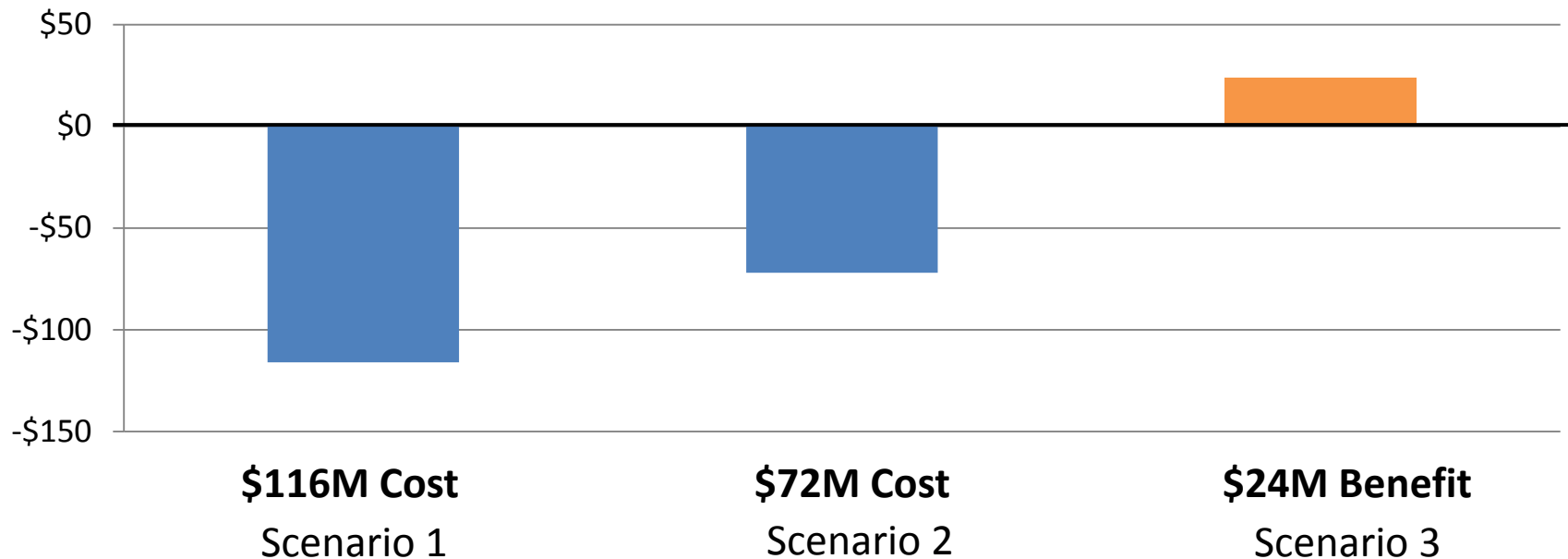
Scenario 3:

Cost and Schedule Differences

Assumptions:

Construction Cost	P3 is 5% lower than PDB*
O&M Cost	P3 is 20% lower than PDB*
Schedule	1 year schedule delay for both*

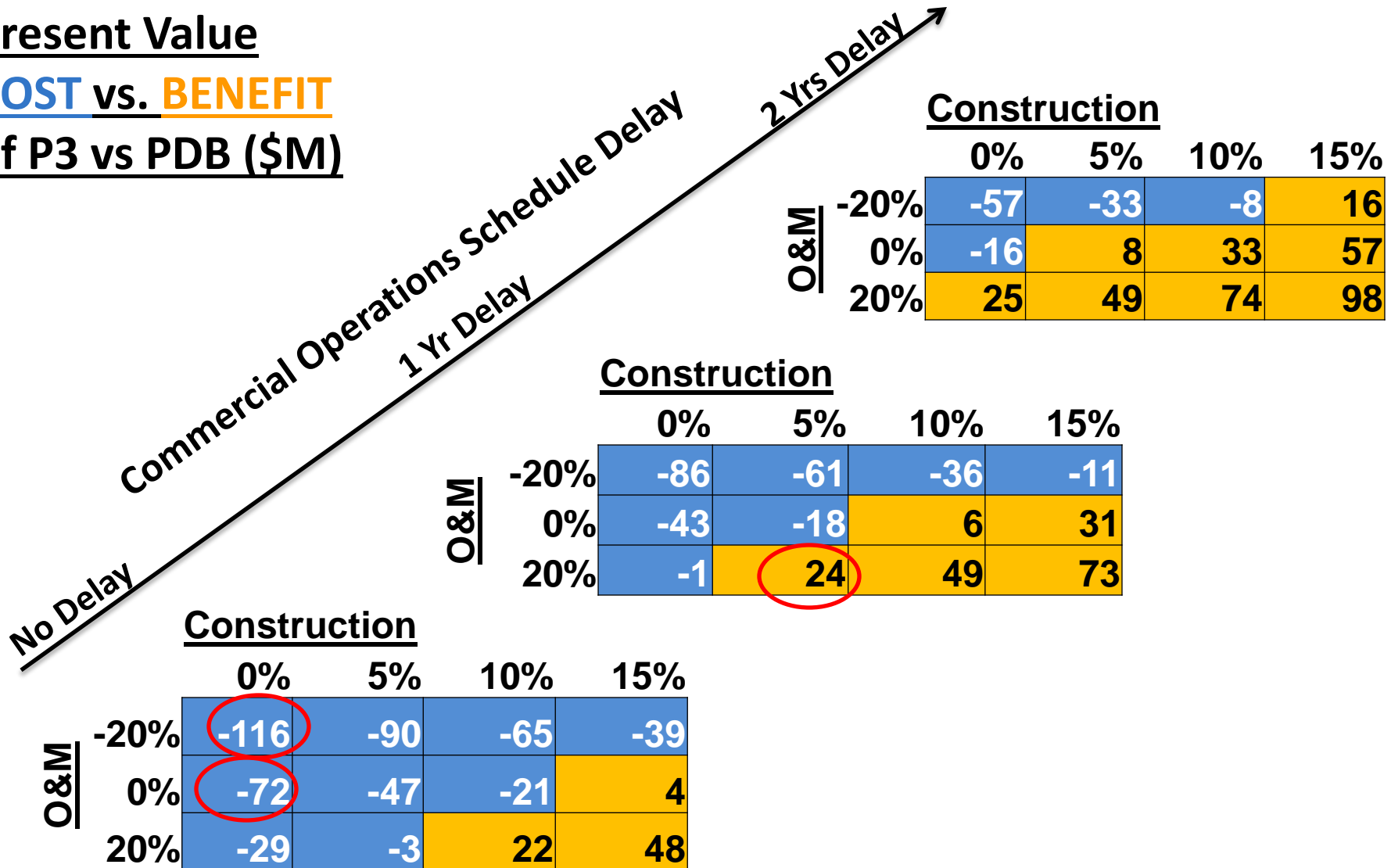
NPV cost (negative) vs benefit (positive) of P3 vs PDB (\$M)



* This scenario shows that P3 may yield lower PV starting based on construction cost, O&M, and schedule differences.

Financial Benefit of P3 Depends on Level of Project Risk and Risk Transfer

Present Value COST vs. BENEFIT of P3 vs PDB (\$M)



Capital Cost Performance Data

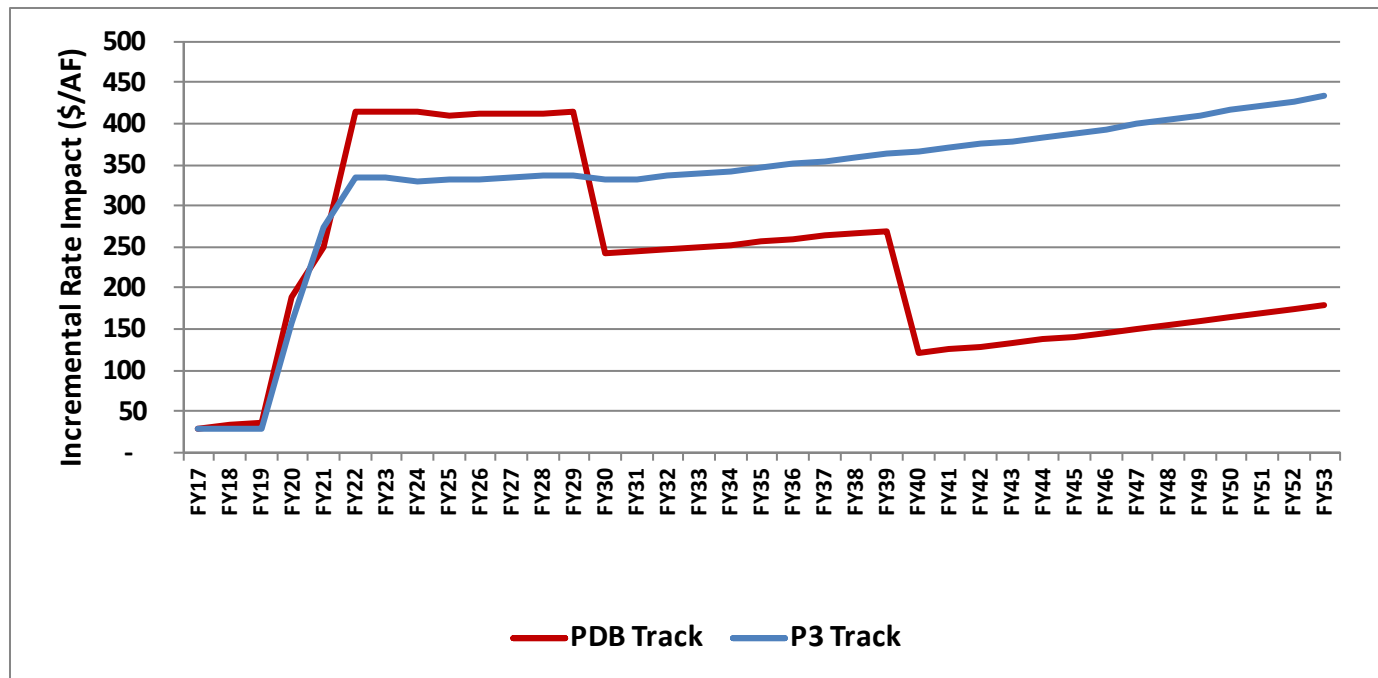
Element	Traditional Design-Bid-Build	Progressive Design-Build
Cost overruns	6%-9% average on District WUE projects since 2000	-0.9% average on recent US water and wastewater projects (-11.9% to +6.5%)*
Causes	<ul style="list-style-type: none"> - Design errors/omissions - Owner-initiated changes - Changed site conditions 	Owner-initiated changes
Relevance	<ul style="list-style-type: none"> - Low - Bid approach favors cost minimization and adversarial relationships 	<ul style="list-style-type: none"> - High - Integration of designer and constructor with owner involvement results in greater consensus on components and overall collaboration

* Based on HDR survey of 9 PDB projects performed in the US from 2010 to 2016

Rate Impact: Scenario 1

Assumptions:

Construction Cost	Same in both scenarios
O&M Cost	P3 is 20% higher
Schedule	No delay in start of operations

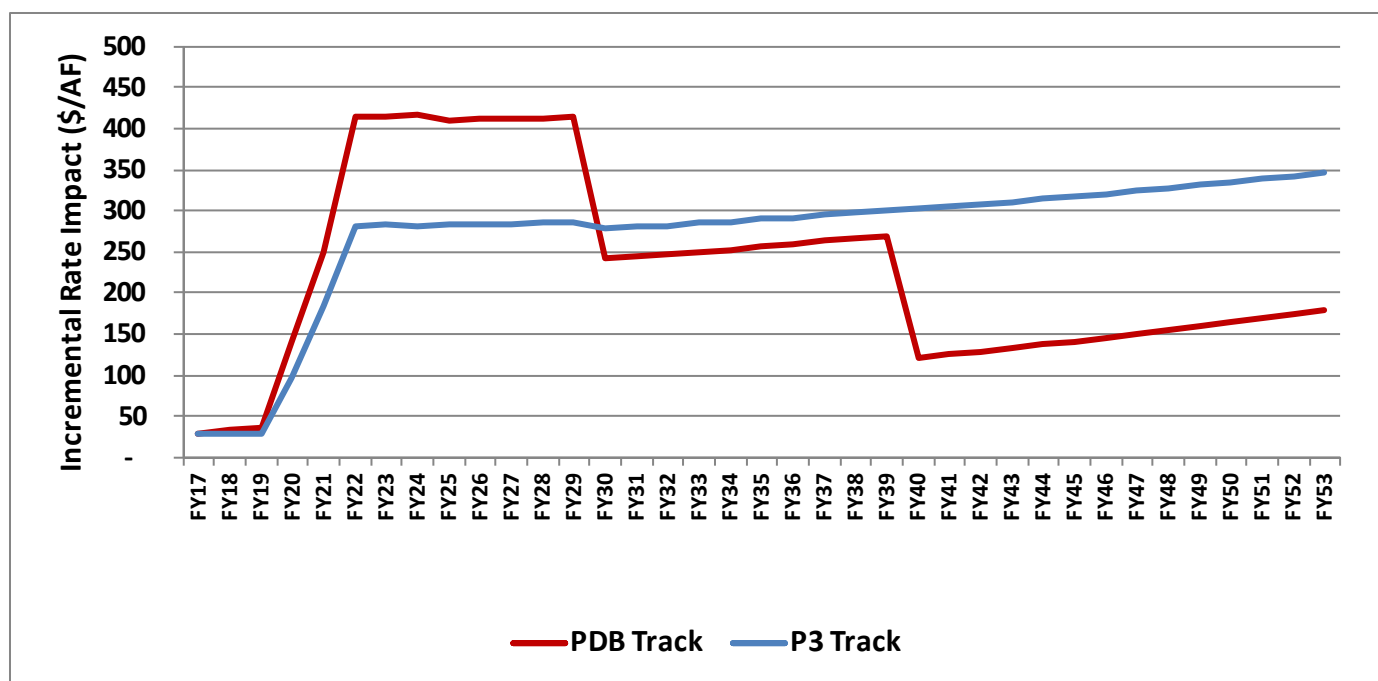


- PDB track assumes level debt service on borrowings
- Alternative financing structure (i.e. deferring principal) can reduce rate projection for PDB track, but at higher borrowing cost

Rate Impact: Scenario 3

Assumptions:

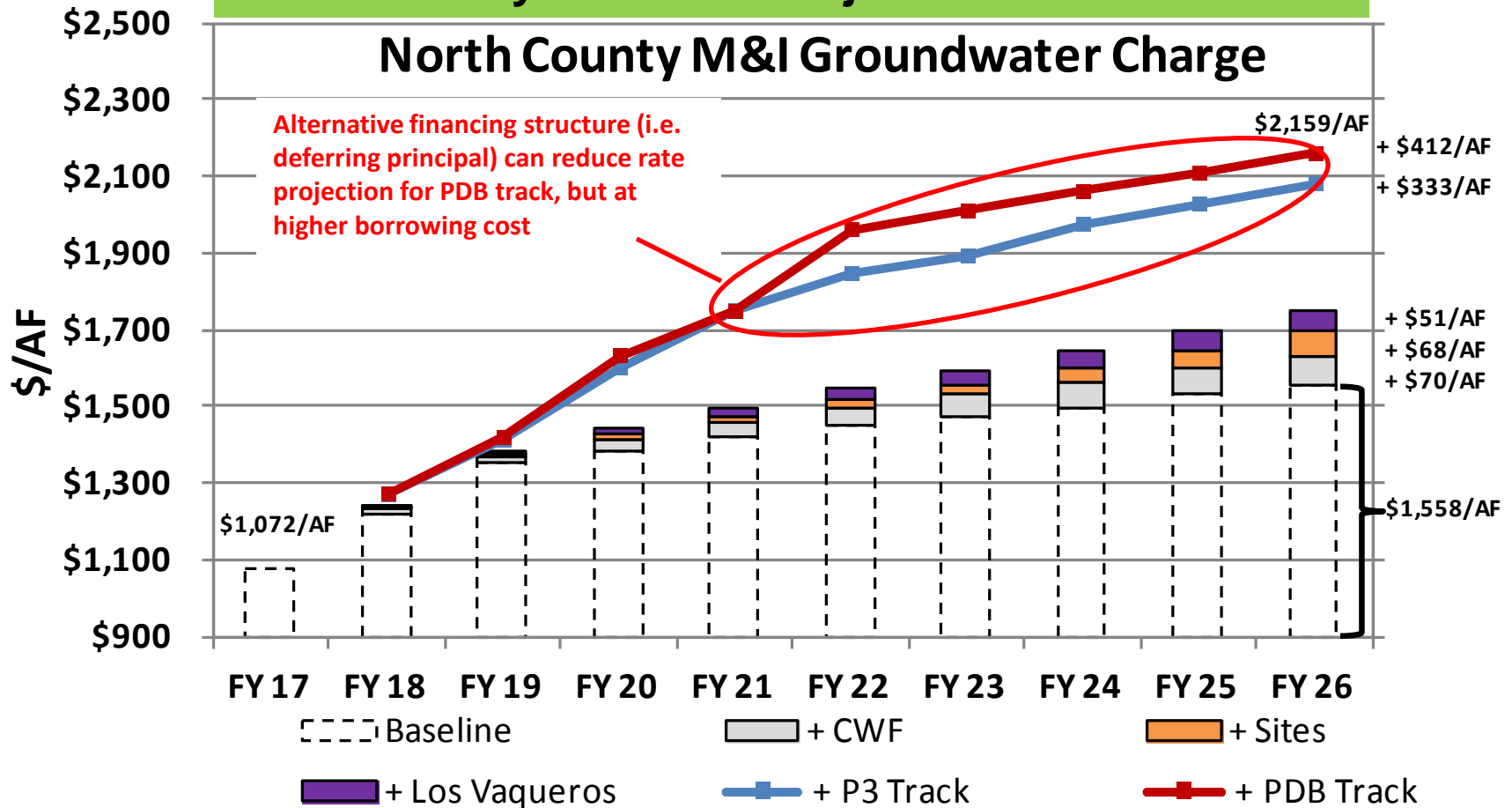
Construction Cost	P3 is 5% lower than PDB
O&M Cost	P3 is 20% lower than PDB
Schedule	1 year schedule delay for both



- PDB track assumes level debt service on borrowings
- Alternative financing structure (i.e. deferring principal) can reduce rate projection for PDB track, but at higher borrowing cost

Financial Impacts Considering Other District Investments

10-Year Layered Rate Projection w/ Scenario 1



Participation in California Water Fix (CWF), Sites Reservoir, and/or Los Vaqueros Reservoir is under consideration; no decisions yet made.

Staff Assessment of Key Objectives – 5

District's Objective	Progressive Design Build	P3 (PDBFOM)
5. Success	<ol style="list-style-type: none"> 1. Nearly identical to historical design-bid-build to external observers. 2. Earlier rise in water rates can be mitigated in long run with financial structuring. 3. Performance success owned by District. 4. District perceived as champion of valuing staff and workforce development. <ul style="list-style-type: none"> • Value to District for strengthening its own core functions? • Value of staff pride in expanding capabilities? 	<ol style="list-style-type: none"> 1. New process with potential ripple effects in region. 2. Water rates slower to rise but long-term premium is paid for risk transfers. 3. P3 performance success relieves some burdens, but District, as regulator, still owns failures. 4. Potential union issues with P3 O&M contract? 5. Impacts of organizational /cultural change to District. <ul style="list-style-type: none"> • Staff morale • Trust in senior leaders

Why Do Agencies Utilize P3 Approaches?

1. Does the agency have the O&M expertise?
2. Does the agency have the money?
3. Does the agency have the fiscal discipline to maintain O&M budgets?
4. Does the private partner bring something to the table (e.g., permits, water rights, rights of way) that the agency needs?

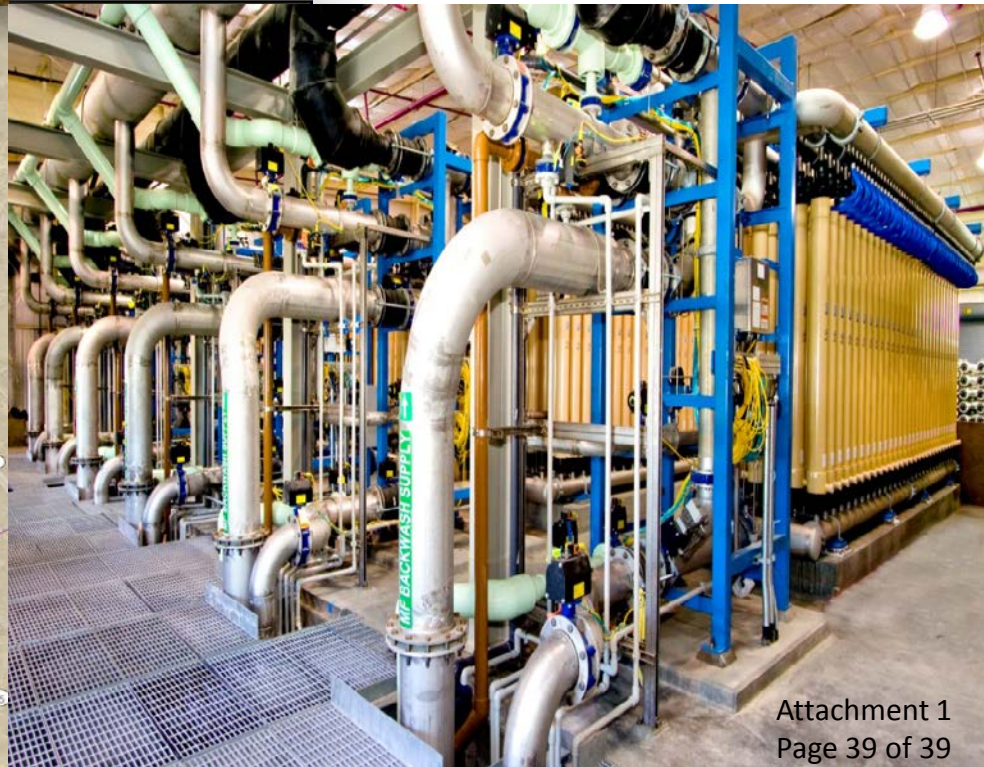
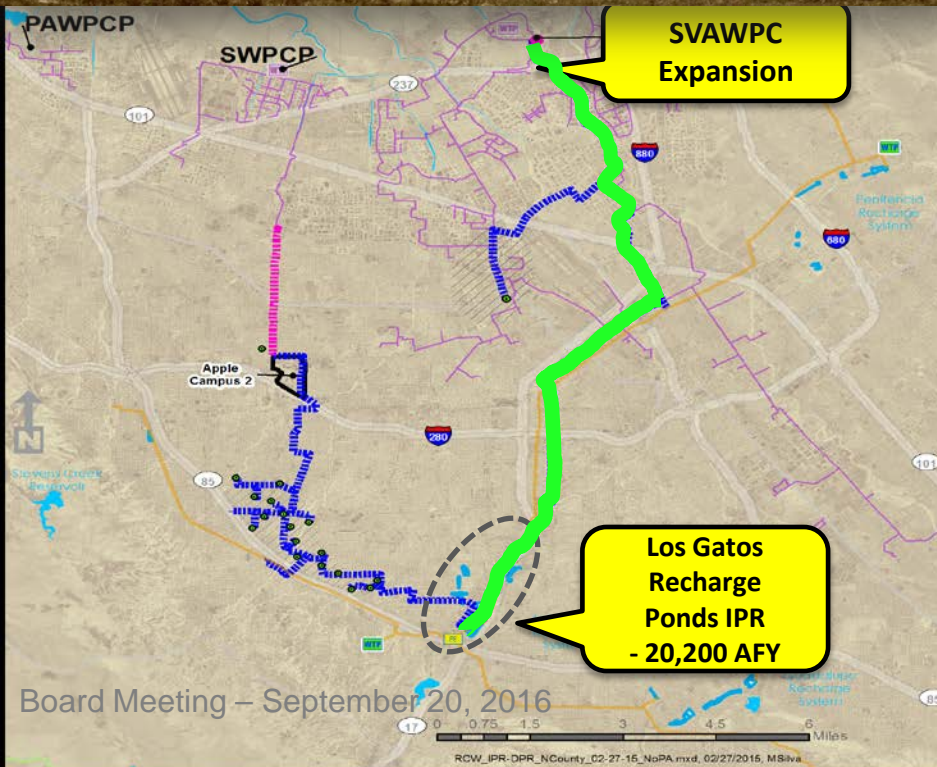
Staff Recommendation: Progressive Design-Build

PDB best aligns with District's objectives:

- PDB affords simplified contract negotiations with nearly equivalent incentive structure (GMP limits cost overruns, incentivized performance to accelerate delivery, etc.) as a P3 .
- PDB would retain District as project owner with O&M responsibilities: a “doer” vs. a water purchaser/“regulator.”
- PDB would allow District O&M control of purified water facilities and afford better management/flexibility/integration with in-county water distribution and treatment system.
- PDB would allow District to leverage its core competencies and expand workforce capabilities.
- Key cost risks associated with construction, financing, O&M can be managed.

Recycled Water Committee Key Comments from September 7, 2016 Meeting

1. Consider privatizing existing SVAWPC **and** expanded SVAWPC operations to make a P3 more viable.
2. Concerns expressed regarding cumulative impacts of financing this Program and other water supply efforts (CalWater Fix; Sites or Los Vaqueros Reservoirs).
3. Need to characterize risk transfer, particularly for capital cost overruns.
4. Should consider PDB for Los Gatos Pipeline and P3 for expanded SVAWPC.



Board Meeting – September 20, 2016