

# Water-Sector P3 Projects

## *Market Trends and the Relative Cost of Service*

*MWH Infrastructure Development, Inc.*



**MWH**<sup>®</sup>

***BUILDING A BETTER WORLD***

# MWH Global

**1**

**Top Int'l Design Firms**

**– Sewer\***

*Engineering News Record*

**3**

**Top Int'l Design Firms**

**– Water Supply\***

*Engineering News Record*

**2**

**Top Int'l Contractors**

**– Wastewater Treatment**

*Engineering News Record*

**8**

**Top 50 Employers**

**for Women Engineers**

*Women Engineer*

**2**

**Top Design Firms**

**– Wastewater Treatment**

*Engineering News Record*

**9**

**Best Private Company**

**for Leaders**

*Chief Executive*

**2**

**Top Firms**

**in Water\***

*New Civil Engineer*

 Based on global revenues

# Why Would You Consider Private Finance?

## Leverage Capital

- New sources of capital to better leverage your own – resulting in more needs met at optimal cost.

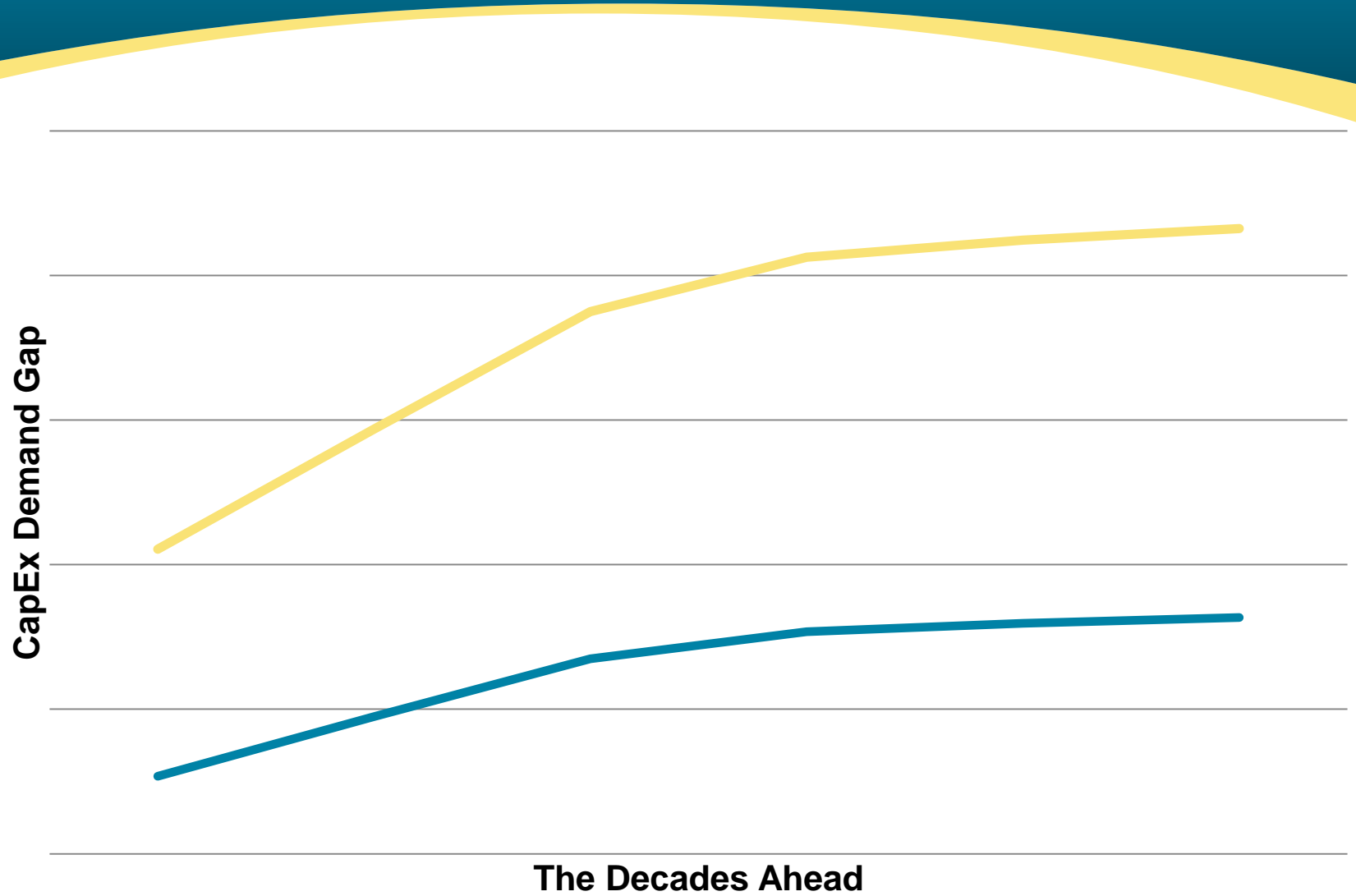
## Save Money

- Delivery approaches provide faster & less expensive options than traditional means.

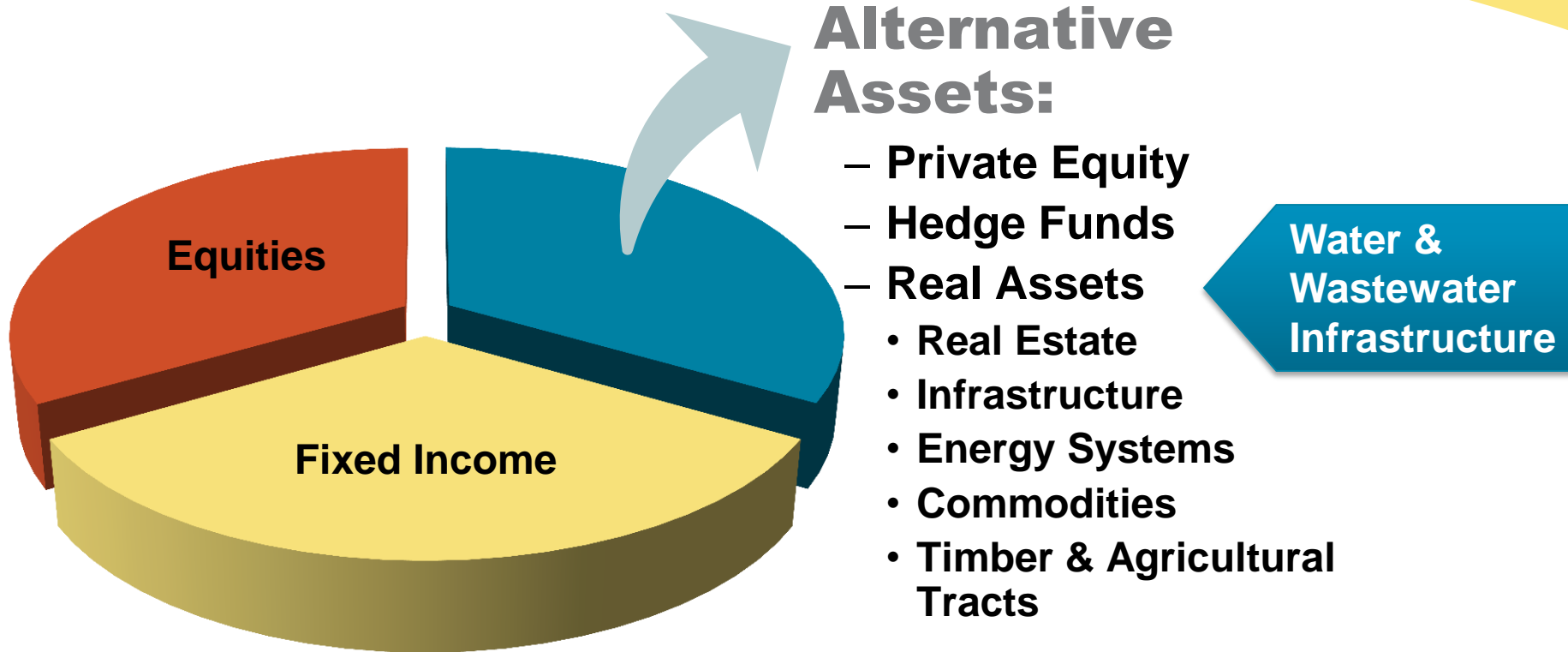
## Transfer Risks

- Allows you to allocate risk through proven private sector risk management approaches.

# Water Infrastructure Funding Gap



# Private Capital Targeting Infrastructure Investments

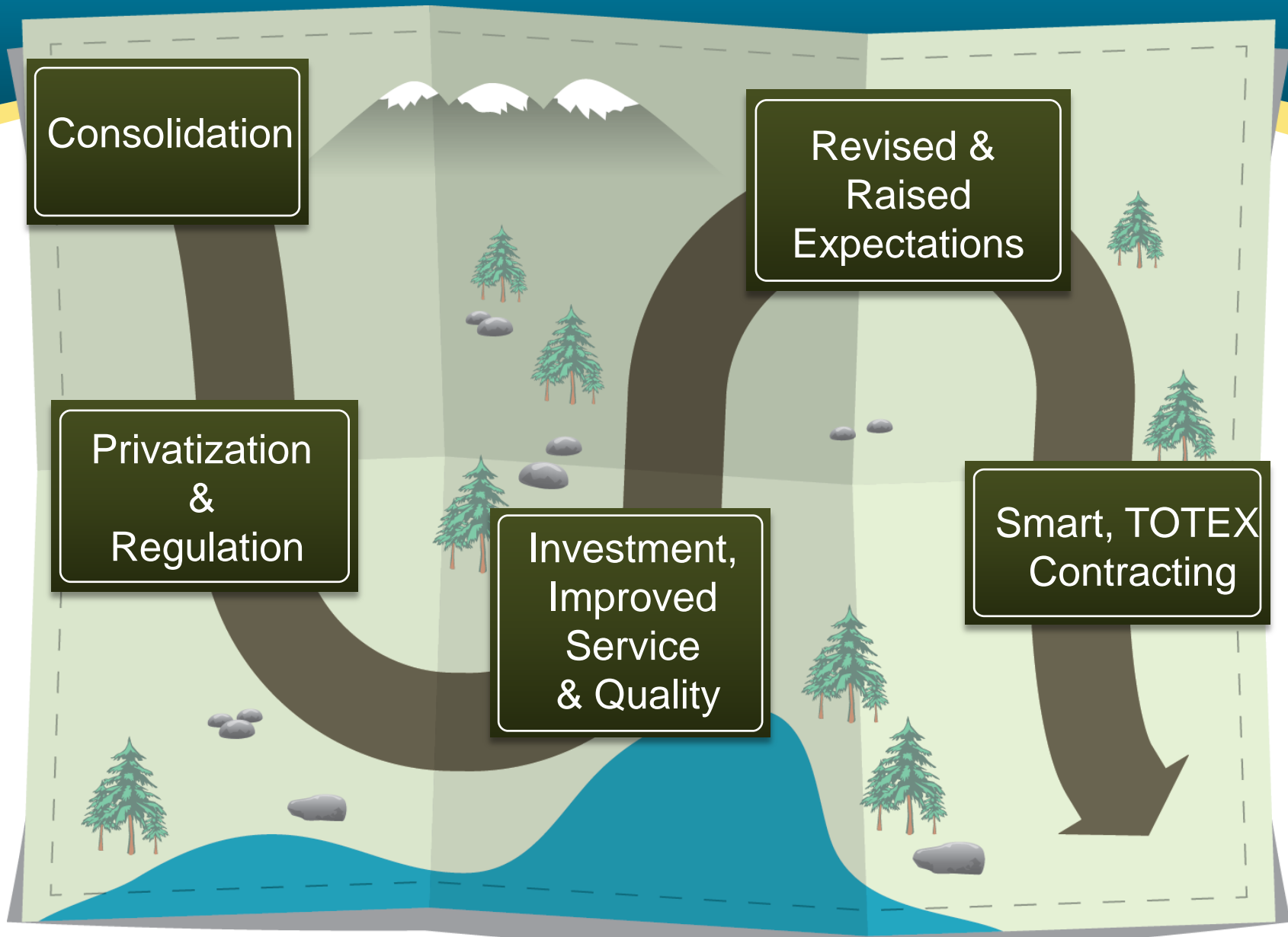


**Institutional Investors**

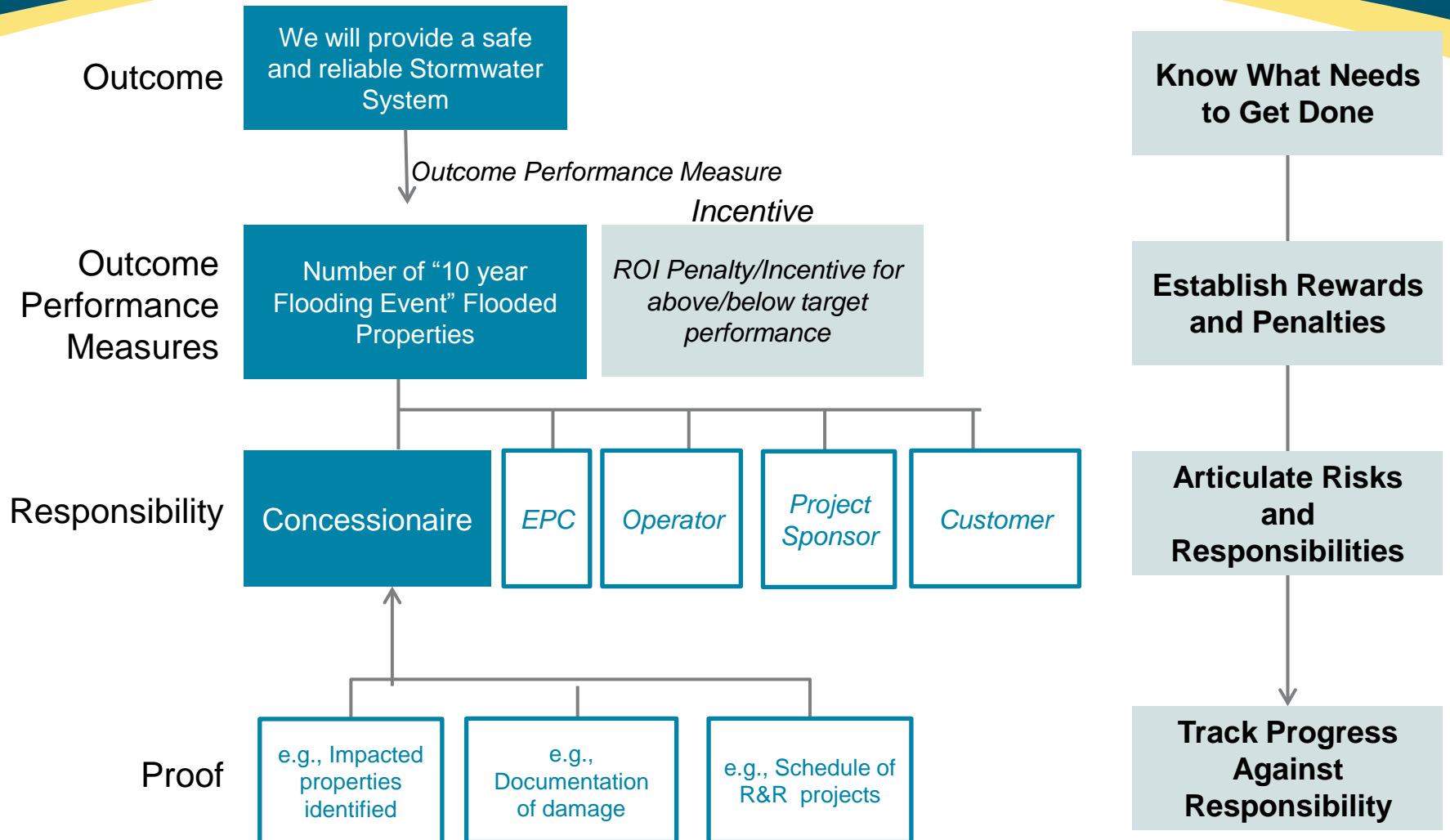
# Water-Sector Public-Private Partnerships

- Few Water P3s in the U.S.
- Currently, we have Water P3 Projects under development in California, Colorado, Texas, and Florida
  - Storm water
  - Drinking water treatment
  - Waste water treatment
  - Water storage & conveyance

# Private Ownership & Public Participation in the UK Water Sector



# UK AMP Cycle – Contracting for Delivery



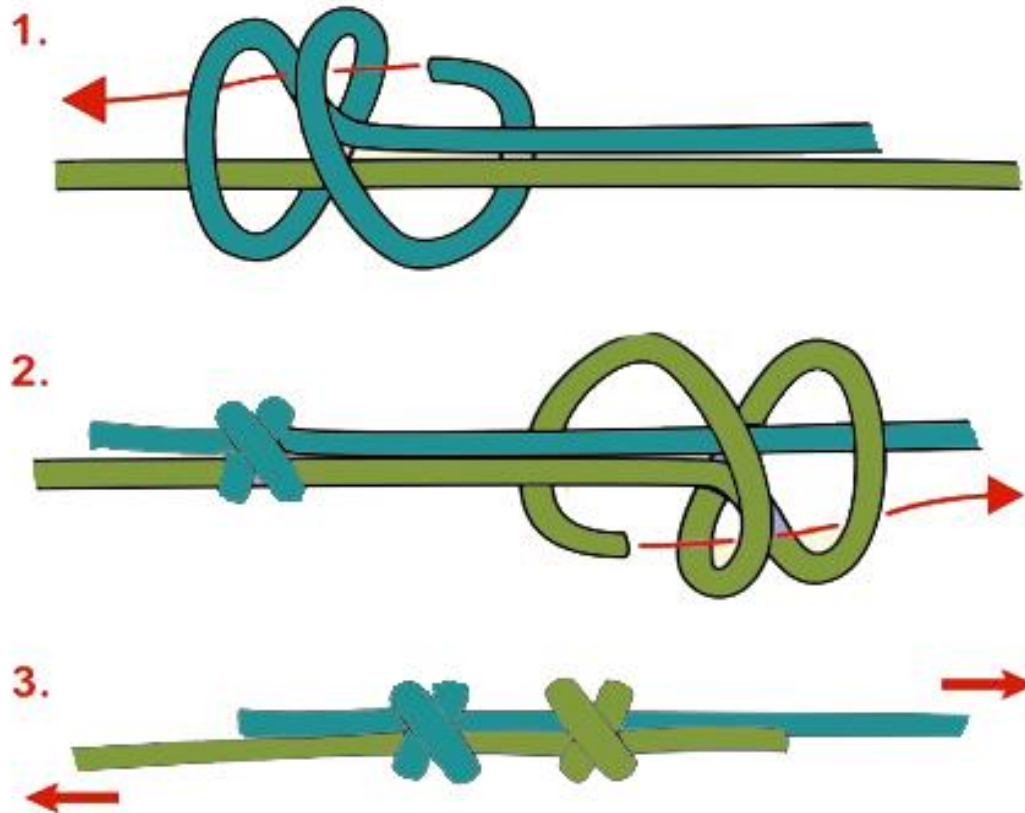


# Public-Private Partnerships Can Work, but...

- ✓ • Cost of Capital Hurdle Overcome
- ✓ • Political Will
- ✓ • Stakeholder Engagement
- ✓ • Legal, Commercial, Financial, Technical Sophistication - Both Sides
- ✓ • Parties Must Accept Changed Roles
- ✓ • Key Contract Issues Recognized and Addressed Early
- ✓ • Innovative Thinking – P3s Can Add Flexibility

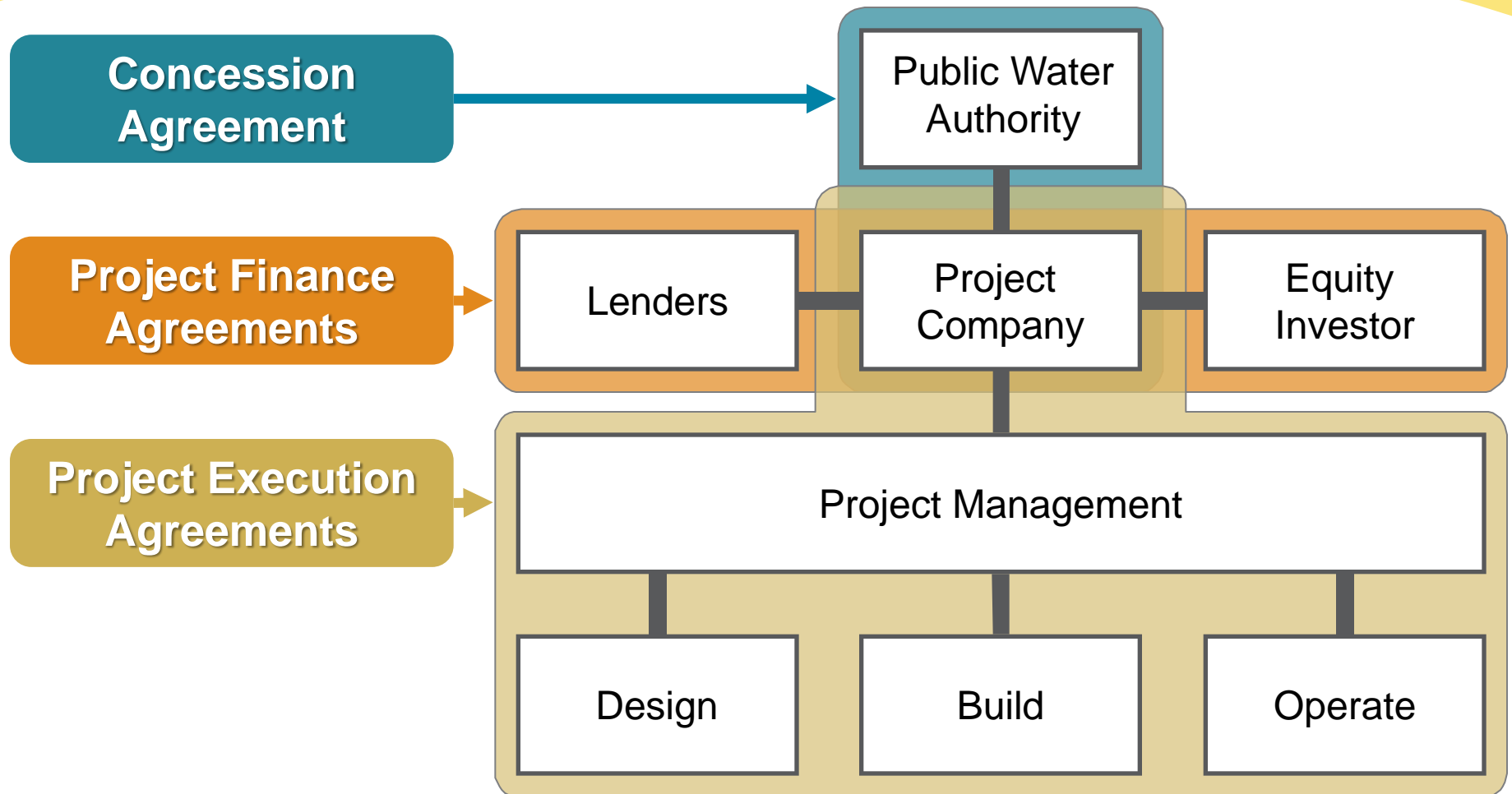
# Contracting for a Successful P3

## Double Fisherman's Knot



# Typical Project Development Structure

*Risks are Transferred through Project Agreements*

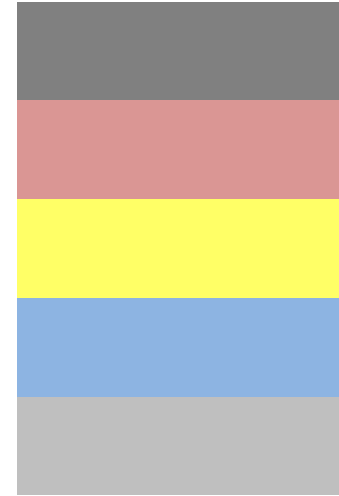


# How Risks Stack Up for the Project Sponsor

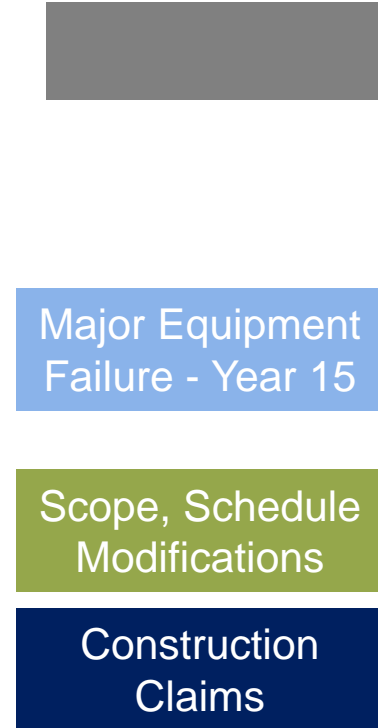
Design Bid Build



Design Build



DBOF



- Permit/Law Changes
- Financing Costs
- Equipment Failure
- Capital Replacement Costs
- Operations
- Change Orders
- Legal Disputes
- Performance Risk
- Design Errors
- Schedule

# Identify & Quantify the Risks

Northern Ohio Regional Sewer District  
Division for Health and Compliance

### RISK REGISTER - INITIAL DRAFT

Health Storage Tunnel and Tunnel Driveway Pump Station

RISK TYPE & RISK EVENT	Likelihood of Occurrence (L)	Severity (S)	Risk Ranking	Area Impacted	Approximate Schedule Impact (months)	Probable Cost Impact (\$M)	WHY Risk	IF Risk	Last Responsibility	Design Discipline (Affected)	Risk Assessment	Risk Control Measures in Design or Mitigation	Residual Risk
Regulatory	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	L x S	A - Schedule B - Cost C - Safety/Health D - Other						A - Architect B - Structural C - Civil D - Electrical E - Mechanical F - Plumbing G - Sanitary			

OPA mandated minimum controls on all overflows

Transferrable Risks	Estimated Cost	Probability of Occurrence	Probability-Adjusted Cost of Risk
Design Delay	\$3,000,000	30%	\$900,000

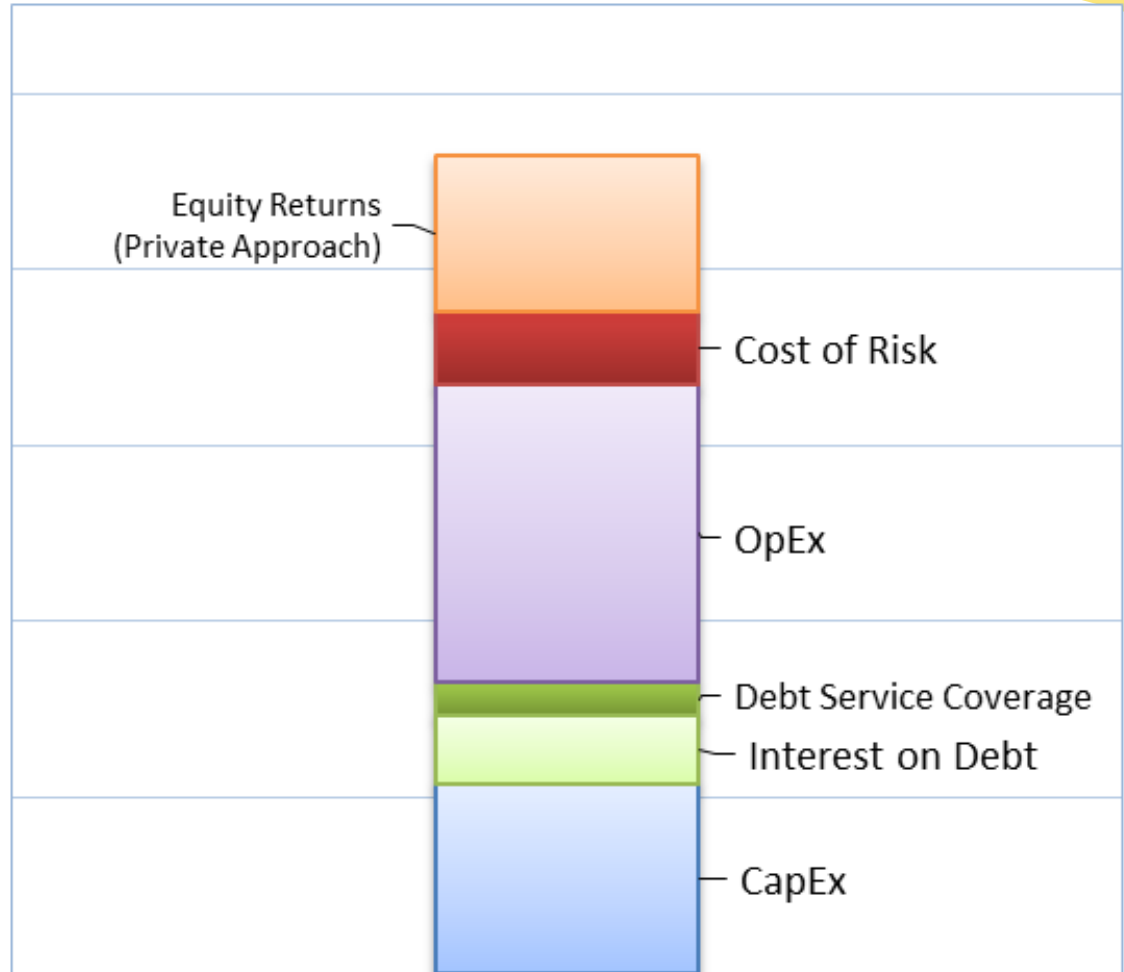
Risk Description	L	S	Ranking	Area	Cost (\$M)	WHY Risk	IF Risk	Last Responsibility	Design Discipline	Risk Assessment	Control Measures	Residual Risk	
Problems / Delays / Disruptions	3	4	12	S.C.	3	0.5	2000	5000	1,2	9	Work with ARCHITECT to establish needed and enforceable permit dates and coordination requirements on construction and operation.	Work with ARCHITECT to establish needed and enforceable permit dates and coordination requirements on construction and operation.	Work with ARCHITECT to establish needed and enforceable permit dates and coordination requirements on construction and operation.
Ability to obtain property acquisitions, PCNs assessments, permits for RR and ODOT crossings or unforeseen legal actions by community, OPA, ODOT, etc.	3	4	12	S.C.	2	5			1	C	We are planning on multiple borings and to use existing data. This is a big deal for us and we have time and money to resolve it as reasonable as possible. Additional measures should be placed to handle the problem and/or investigate as needed items.	There is not a lot of time to try the alignment to avoid the issue as it will not be easy and will need the construction contingency planning even after how the work.	
RR establishes unrelated requirements for their crossing	2	3	6	C	0	1			1,2	C	The part of the process has to start early with contingency planning in the schedule should legal action be required. We need to know when the time for negotiations has run out and when legal action needs to begin in order to meet the current review schedule and implement it. Maintain both paths continuously.	May prematurely want to to require further clarifying the parties from meeting an agreement resulting in a forced longer schedule.	
Insufficient number of bidders	2	3	6	C	0	10			1	C	Include the right technical personnel to support RR and be involved in the final decision, paying for it if needed. Otherwise, accept that requirements and make it work. If they want done, we can design to have that required.	Low time and effort fighting their requirements when it may be just as easy to negotiate them as it is a very small part of the overall project.	
Contractor bids Higher than Opinion of Probable Cost due to inaccurate estimate, change in market conditions, change in material quantities, inflation, perturbation of new contract, etc.	3	3	9	C	0	20			3	C	Fixed contract and contract terms will get the bidders to come. Maintain positive relationship with current and potential and good communication. If the work, we probably review time and effort or negotiate with additional low bidder.	Low time and effort fighting their requirements when it may be just as easy to negotiate them as it is a very small part of the overall project.	
Claims due to ambiguities in contract	3	2	6	S.C.	0	5	45000	100000	1,2	C	Clarify, review of the contract including the OPA and the way to the contract development, including review by our technical advisory committee and by legal advisors.	May be prevented as early as possible by clarifying a bidder if they are allowed to negotiate instead of waiting for a bidder that may result in lower bidders and higher risk work.	
Contractor Change Orders exceed District General Allowance	3	2	6	C	0	20	30000	50000	1,2	C	Clarify, review of the contract including the OPA and the way to the contract development, including review by our technical advisory committee and by legal advisors.	May be prevented as early as possible by clarifying a bidder if they are allowed to negotiate instead of waiting for a bidder that may result in lower bidders and higher risk work.	
Conflicts with ODOT work using alignment	3	3	9	S.C.					2	C	Work with ODOT to coordinate work and schedule as they are available.	Work with ODOT to coordinate work and schedule as they are available.	
Conflicts with DWD for relocation of guard areas, chemical deliveries or personnel access	3	1	3	S			50000		3,3	C	Work with DWD at regular points to coordinate work and schedule as they are available.	Work with DWD at regular points to coordinate work and schedule as they are available.	
Conflicts with Great Lakes Towing new building	3	3	9	S.C.H	3				1,2	C,C,S	Work with CH2M at regular points to coordinate work and schedule as they are available.	Work with CH2M at regular points to coordinate work and schedule as they are available.	
General Construction Risks													
Abandon or stoppage of tunnel/shaft excavation production due to unforeseen geologic conditions	3	4	12	S.C.	6	15		5000	1,2,3	9	Document project and keep extensive and appropriate field records to ensure claim validity and to design. Adequate geotechnical investigation to predict ground conditions. Clearly define these conditions and provide during construction.	Additional data collection and mapping can get in the way of production impacting the schedule also. Information might be obtained which indicates a CH2M that used an excuse for not starting out earlier.	
Equipment failure, material shortages, labor unrest, force majeure, adverse weather impact the schedule	4	4	16	S.C.	3	10			1,2,3	C	Review procurement of OPA prior to start of construction with spare major parts available. Allow for alternative materials as much as possible. Labor unrest, force majeure, acts of god are difficult to manage as they are for the most part out of everyone's control. Maintain an aggressive schedule at the very beginning so that there is always available should one of these major conditions impact the project.	Additional data collection and mapping can get in the way of production impacting the schedule also. Information might be obtained which indicates a CH2M that used an excuse for not starting out earlier.	
Other Construction Risks													
BM major component failure	3	4	12	S.C.	3	5							

# Cost of Service over the Life of the Project

## *Private Financing vs. Public Funding*

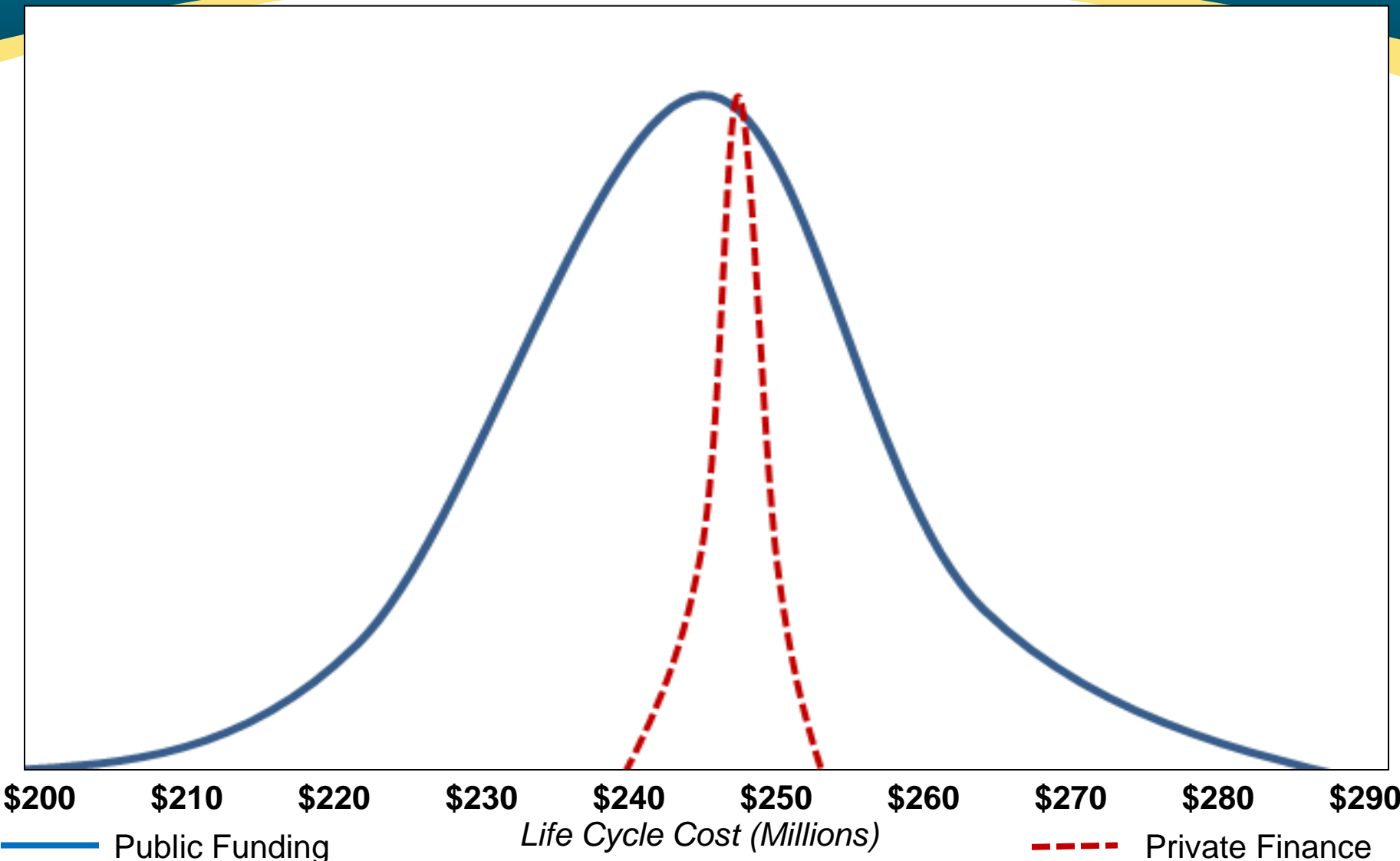
- CAPEX
- OPEX
- FINEX
- RISKEX

Lifecycle Cost per Unit Delivered



# Life-Cycle Costs

*Compare Probability Distributions for Private Financing vs. Public Funding*



# Expand Your Options

## Leverage Capital

- New sources of capital to better leverage your own – resulting in more needs met at optimal cost.

## Save Money

- Delivery approaches provide faster & less expensive options than traditional means.

## Transfer Risks

- Allows you to allocate risk through proven private sector risk management approaches.



# Thank You

**Rick Adcock**  
Managing Director  
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MWH Global



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