


# **COST ESTIMATING FOR WASTEWATER INFRASTRUCTURE**

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King County Wastewater Treatment Division,  
Project Planning and Delivery Section

Presented to the **Rates and Finance Subcommittee**  
of the Metropolitan Water Pollution Abatement  
Advisory Committee (MWPAAC)

May 5, 2022



## TYPICAL ESTIMATE TIMELINES

King County's Wastewater Treatment Division (WTD) has a large and complex capital program that may require multiple cost estimates over time as a 'problem' or need transitions to a 'project' or solution

- Long-Term System Planning
- Concept Definition
- Pre-Design
- Alternatives Analysis
- Design
- Bid for Construction
- Construction Change Orders



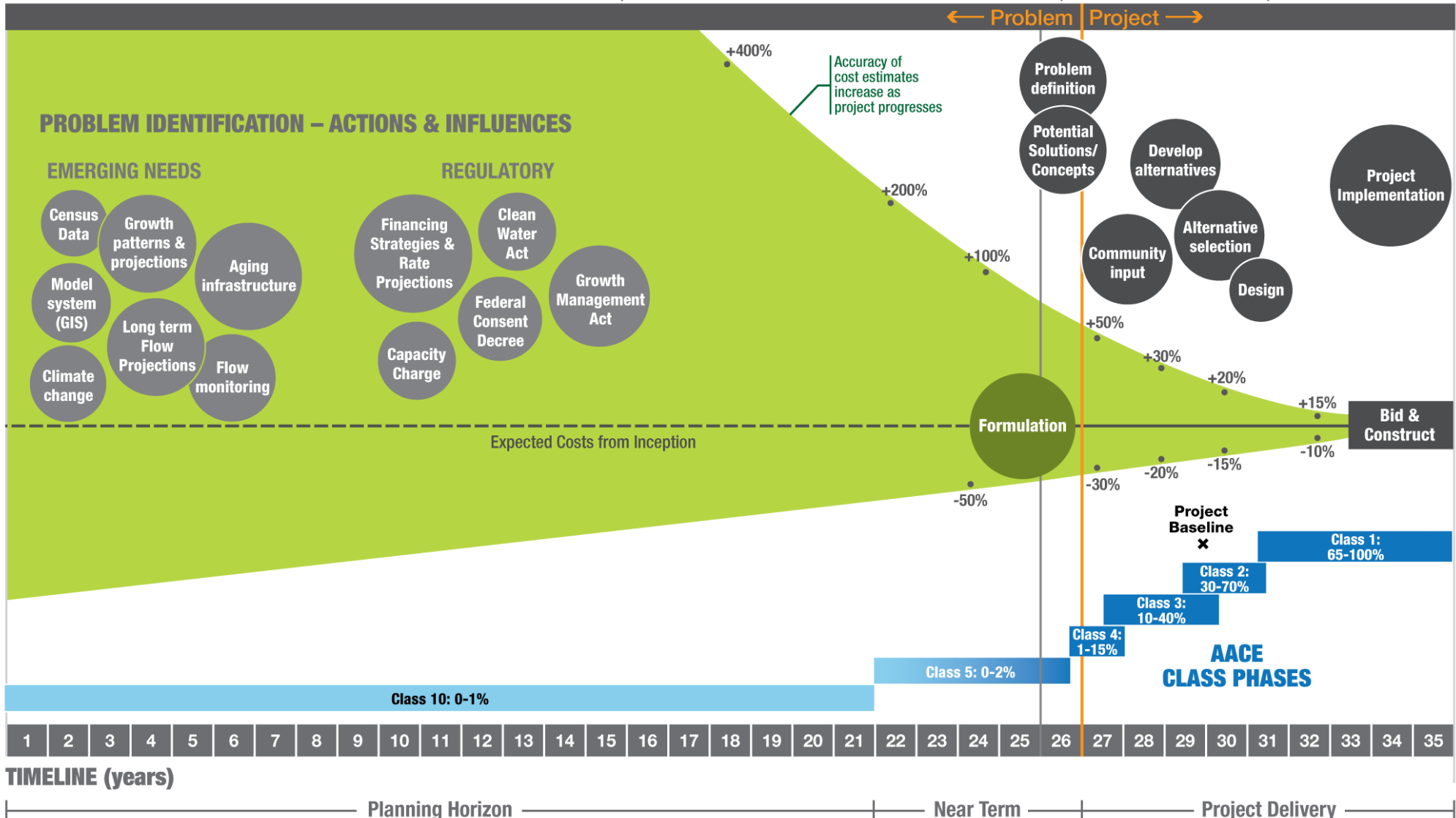
LONG-TERM  
ESTIMATES  
CONSIDERATIONS

- This highlights the primary unknown factors of a long-term (possibly decades away) cost estimate:
  - What's the problem and its future solution? Will regulations change?
  - Are future population, climate, flow and capacity projections sufficient?
  - Where will it be sited?
  - What might inflation, resource constraints and market conditions be decades from now?

**Long Term System Planning**

**Concept Definition**  
 Budget authorization

**Capital Project Delivery**





WORKING  
WITH AACE

- AACE International is the Association for the Advancement of Cost Engineering.
- AACE is the international standard for Cost Engineering using integrated means and methods to enable sound decision making in enterprise asset management.
- AACE's Body of Knowledge is developed, refined, and deployed by industry professionals worldwide.
- **WTD was asked to work with AACE to establish a new recommended practice for public sector long-range planning.**

**AACE**  
INTERNATIONAL  
**RECOMMENDED  
PRACTICE**

**111R-20**

# ESTIMATING FOR LONG RANGE PLANNING – AS APPLIED FOR THE PUBLIC SECTOR

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**AACE**  
INTERNATIONAL

AACE® International Recommended Practice No. 111R-20

## ESTIMATING FOR LONG RANGE PLANNING – AS APPLIED FOR THE PUBLIC SECTOR

TCM Framework: 3.2 – Strategic Asset Planning

Rev. March 19, 2021

Note: As AACE International Recommended Practices evolve over time, please refer to [web.aacei.org](http://web.aacei.org) for the latest revisions.

Any terms found in AACE Recommended Practice 105-00, *Cost Engineering Terminology*, supersede terms defined in other AACE work products, including but not limited to, other recommended practices, the *Total Cost Management Framework*, and *Skills & Knowledge of Cost Engineering*.

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AACE International Recommended Practices

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# NEW AACEI RECOMMENDED PRACTICE

# ESTIMATING FOR LONG-RANGE PLANNING – AS APPLIED FOR THE PUBLIC SECTOR

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# AACEI COST ESTIMATE CLASSIFICATION SYSTEM

% OF DEFINITION

EXPECTED ACCURACY RANGE

WTD COST ESTIMATES

<b>Class 10</b>	Public Sector Long-range Planning	0% - 1%	-50% - +300%	Long-Term System Planning
<b>Class 5</b>	Concept Screening	0% - 2%	-50% - +100%	Concept Definition
<b>Class 4</b>	Study or feasibility	1% - 15%	-30% - +50%	Pre-Design Alternatives Analysis
<b>Class 3</b>	Budget Authorization	10% - 40%	-20% - +30%	Design
<b>Class 2</b>	Bid Tender	30% - 75%	-15% - +20%	Bid for Construction
<b>Class 1</b>	Check Estimate	65% - 100%	-10% - +15%	Construction Change Orders



# BASIS OF ESTIMATE

**Project Planning and Delivery Section**

**BASIS OF ESTIMATE**

Project Name	<b>Title Here</b>
Project Number	123456
Date Prepared	Date
Requested by	Name
Prepared by	Name and/or Firm
Estimate Classification	Class 5, etc.
Estimate Purpose	Charter, Gate, etc.
Estimate ID (Version)	Number
Project Manager	<b>Name</b>
Project Control Engineer	Name
CC or Distribution List	Names

1. Purpose
2. Project Scope Definition
3. Design Basis
4. Planning Basis
5. Cost Basis
6. Allowances
7. Assumptions
8. Exclusions
9. Exceptions
10. Risks (Threats and Opportunities)
11. Contingency
12. Management Reserve
13. Reconciliation
14. Benchmarking
15. Estimate Quality Assurance Plan:
  - Attachment A: Estimate Deliverables Checklist
  - Attachment B: Reference Documents
16. Attachments

# BASIS OF ESTIMATE AND ESTIMATE SUMMARY



**Project Planning and Delivery Section**  
**BASIS OF ESTIMATE**

Project Name	<b>Title Here</b>
Project Number	123456
Date Prepared	Date
Requested by	Name
Prepared by	Name and/or Firm
Estimate Classification	Class 5, etc.
Estimate Purpose	Charter, Gate, etc.
Estimate ID (Version)	Number
Project Manager	<b>Name</b>
Project Control Engineer	Name
Cc or Distribution List	Names Names

Estimate - AACEI Class 5						Base Year	Estimate Year
Project Name:						2019	2019
Location:							
Description:							
Date:							
Estimator:							
Version:							
<b>DIRECT: SUBTOTAL CONSTRUCTION COSTS</b>							
Item No.	Item Description	Quantity	Units	Unit Cost	Item Cost		
1				\$	-		
2				\$	-		
3				\$	-		
4				\$	-		
5				\$	-		
6				\$	-		
7				\$	-		
8				\$	-		
9				\$	-		
10				\$	-		
11				\$	-		
12				\$	-		
13				\$	-		
14				\$	-		
15				\$	-		
16				\$	-		
17				\$	-		
18				\$	-		
19				\$	-		
20				\$	-		
21				\$	-		
22				\$	-		
23				\$	-		
24				\$	-		
25				\$	-		
<b>Subtotal Construction Costs</b>					\$	-	
Allowance for Indeterminates (Design Allowance)					\$	-	
Street Use Permit					\$	-	
<b>ESTIMATED PROBABLE COST OF CONSTRUCTION BID</b>					\$	-	
<b>DIRECT: SUBTOTAL ADDITIONAL CONSTRUCTION COSTS</b>							
Mitigation Construction Contracts					\$	-	
Construction Change Order Allowance					\$	-	
Material Pricing Uncertainty Allowance					\$	-	
<b>Subtotal Primary Construction Amount</b>					\$	-	
Construction Sales Tax					\$	-	

# QUESTIONS

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