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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of California-American Water
Company (U210W) to Obtain Approval of an
Updated Cost Cap for the Monterey Peninsula
Water Supply Project and Updated Ratemaking
Framework.

Application _____
(Filed ____, 2026)

DIRECT TESTIMONY OF DR. WILLIAM IBBS

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Dated: October 23, 2026

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1 **BEFORE THE PUBLIC UTILITIES COMMISSION**
2 **OF THE STATE OF CALIFORNIA**

3 Application of California-American Water
4 Company (U210W) to Obtain Approval of an
5 Updated Cost Cap for the Monterey Peninsula
6 Water Supply Project and Updated Ratemaking
7 Framework.

Application _____
(Filed ____, 2026)

8 **DIRECT TESTIMONY OF DR. WILLIAM IBBS**

9
10
11 **I. BACKGROUND**

12 Q1. Please provide your name, position, and business address.

13 A1. My name is Dr. William Ibbs. I am the president of the Ibbs Consulting Group. My
14 address is 5714 Hatchery Court, Penngrove, CA.

15
16 Q2. Please explain your experience in providing consulting services to organizations like
17 California-American Water Company (□ California American Water, □ or the □ Company □).

18 A2. I am a professor emeritus and former group leader of the Construction Management
19 program in the Civil Engineering Department at the University of California, Berkeley.
20 For forty years, I taught courses and conducted research in the construction management
21 area, including such topics as project development and management, cost estimating,
22 scheduling, and cost control. I have also led an engineering firm for the past three
23 decades that provides support to private and public clients on large infrastructure
24 projects.

25
26 Q3. Please state your educational and professional background and experience.

27 A3. My CV is included as Appendix A to my report, which is included as Attachment 1 to
28 this testimony.

1 **II. PURPOSE OF TESTIMONY**

2 Q4. What is the purpose of your testimony?

3 A4. My testimony reviews California American Water's cost estimates relating to proposed
4 construction of its Monterey Peninsula Water Supply Project. My findings are discussed
5 in my report, which is attached hereto as Attachment 1.

6
7 **III. CONCLUSION**

8 Q5. Does this conclude your testimony?

9 A5. Yes it does.

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ATTACHMENT 1

In the Matter of

Application of California-American Water Company (U210W) to Obtain

Approval of an Updated Cost Cap for the

Monterey Peninsula Water Supply Project and

Updated Ratemaking Framework

Dr. William Ibbs



The IBBS Consulting Group

October 22, 2026



The Ibbs Consulting Group

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ABBREVIATIONS

AACE	Association for the Advancement of Cost Engineering
AECOM	AECOM Engineers
AFUDC	Allowance for Funds Used During Construction
B&C	Brown & Caldwell Engineers
BAMA	Buy America Made in America agreement
BCI	Building Cost Index
CCCI	California Construction Cost Index
COVID-19	Coronavirus Disease 2019
CPUC	California Public Utilities Commission
DGS	California Department of General Services
EIR	Environmental Impact Report
ENR	Engineering News-Record
GAAP	Generally Accepted Accounting Principles
mgd	Million gallons per day
MPWSP	Monterey Peninsula Water Supply Project
NDPES	National Pollutant Discharge Elimination System
PLA	Project Labor Agreement
RP	Recommended Practice



1. INTRODUCTION

1.1 SCOPE OF ENGAGEMENT

1. I was retained by the California American Water Company to review its estimate of the costs to construct a 4.8 million gallon per day (mgd) phase of its proposed Monterey Peninsula Water Supply Project (MPWSP). I will refer to that as the 2026 MPWSP cost estimate. This report summarizes my findings.

1.2 THE AUTHOR AND THE IBBS CONSULTING GROUP, INC.

2. I, Dr. William Ibbs, prepared this report. I am a professor emeritus and former group leader of the Construction Management program in the Civil Engineering Department at the University of California, Berkeley. Briefly, I taught courses and conducted research in the construction management area, including such topics as project development and management, cost estimating, scheduling, and cost control for forty years. For that work, I received numerous awards and recognition.
3. Prior to my academic career, I worked in the engineering-construction industry with substantial experience on projects that resemble the MPWSP.
4. I also established and have led an engineering firm for the past three decades that provides support to private and public clients on large infrastructure projects. Two examples are especially pertinent to this assignment. First, I have consulted for Bechtel, Inc. and the U.S. Department of Energy on the \$32 billion Hanford Vitrification Project. That assignment required me to review and assess the reasonableness of cost estimates and schedules on that project on three separate occasions. It also required me to testify before certain administrative units of the Department of Energy.
5. A second example is my experience consulting to the San Francisco Public Works Department in reviewing cost estimates and schedules for its \$5 billion Hetch Hetchy Seismic Upgrade Project. Those exercises are, in my opinion, relevant for conducting a review of MPWSP's current cost estimate.



6. A detailed curriculum vitae is contained in Appendix A.

1.3 MATERIALS CONSIDERED AND STANDARD APPLIED

7. To conduct my analysis, I reviewed numerous project documents, including, but not limited to, current and past testimony by California American Water employees.¹ I also reviewed the California Public Utilities Commission (CPUC) decision in 2018 that authorized the \$239.2M cost cap for a 6.4 mgd plant.² My investigation also included visiting the proposed project site on July 8, 2026, and receiving briefings from California American Water's team including Lacy Carothers, David Pezzini, and Tim O'Halloran.

8. I provide no legal opinion on any of the matters discussed herein, and nothing in this report should be construed as legal opinion. I have, however, used my education and experience in matters involving construction law and contracts and, on that basis, offer construction management perspectives herein that may involve legal and contractual implications. My construction management experience is informed by my education, training and experience. That experience includes participating in hundreds of design and construction projects around the world. Also presented throughout the report are

¹ Direct testimony of Lacy Carothers, October 23, 2026; Rebuttal testimony of Jeffrey T. Linam, March 22, 2016; Direct testimony of Christopher Cook, September 15, 2017; Errata to the Direct testimony of Ian Cooks, September 27, 2017; Errata to the Direct testimony of Jeffrey T. Linam, September 27, 2017; Rebuttal testimony of Jeffrey T. Linam, October 13, 2017; Rebuttal testimony of Eric J. Sabolsice, October 13, 2017; and Rebuttal testimony of Christopher Cook, October 13, 2017.

² California Public Utilities Commission, *Decision Approving a Modified Monterey Peninsula Water Supply Project, Adopting Settlement Agreements, Issuing Certificate of Public Convenience and Necessity and Certifying Combined Environmental Report*, Decision No. 18-09-017, Application A.12-04-019 (September 13, 2018),

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M229/K424/229424336.PDF>; *Parties Positions on Supply and Demand*, Appendix B to Decision 18-09-017, Application A.12-04-019 (Public Utilities Commission of the State of California, September 13, 2018),

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M229/K554/229554739.pdf>; California Public Utilities Commission, *Order Modifying Decision (D.) 18-09-017, and Denying Rehearing of Decision, as Modified*, Decision 19-01-051, Application A.12-04-019 (Public Utilities Commission of the State of California, January 31, 2019),

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M262/K004/262004679.PDF>.



citations to academic and professional practice publications that are a benchmark by which I evaluated the Project's cost estimates.

9. This is a good faith review of the MPWSP cost estimate in accordance with standard construction management industry practices for such an assignment.

10. I have exercised reasonable care and skill to ensure correctness and completeness in preparing this report. This report covers all relevant issues concerning the matters stated and which I have been asked to address. Those matters are within my expert knowledge, and the opinions expressed herein represent my independent, objective, unbiased, and complete professional opinion.

11. The standard I have applied in this investigation, and in previous reviews I have performed, involves both a quantitative and qualitative analysis of the circumstances 1) encountered by the Project over the past nine years and 2) that are foreseeable at this stage of project development.

12. The quantitative analysis includes a review of the estimates provided by engineering design consultants, escalation rates, and contingency levels. The qualitative analysis involves judgment on matters such as the complications and effects of trying to build massive public projects like this.

13. I reserve the right to revise my analysis, opinions, and conclusions if further investigation is performed or if I receive additional material or evidence

1.4 STRUCTURE OF THE REPORT AND DECLARATION

14. This report has been prepared with a view to assisting the CPUC in assessing the reasonableness of California American Water's cost cap proposal. My analysis was carried out from a construction management perspective, not a legal or forensic accounting perspective.



15. To assess the overall reasonableness of California American Water's MPWSP 2026 cost estimate, I was asked to answer and have answered in this report the following questions:

- a. Was the 2017 cost estimate for the MPWSP reasonable?
- b. Is the 2026 cost estimate for the MPWSP reasonable?
- c. What is the percentage change between the 2017 and 2026 cost estimates for the MPWSP?
- d. What are the main factors that caused that percentage change between those two estimates?
- e. What are the sources of that cost growth, and have other large projects had comparable cost growth during this time period?
- f. Is the cost growth that the MPWSP incurred between 2017 and 2026 reasonable given the circumstances the Project has encountered over the past nine years?

16. The report is organized so that those questions are addressed step-by-step in subsections. It starts with an executive summary of findings, followed by a discussion of construction cost estimating fundamentals and a brief description of the Project. It then reviews the 2017 and 2026 MPWSP cost estimates, their reasonableness, and the causes of cost growth between them, which together underlie California American Water's cost cap proposal. It concludes with a summary of my opinion about the proposal's overall reasonableness.

17. Respectfully submitted,



William Ibbs, Ph.D.



2. EXECUTIVE SUMMARY

18. I was to and have conducted a thorough review of California American Water's cost estimate for the 2026 version of its MPWSP and reached the following conclusions:

- a. The 2017 estimate of the MPWSP is reasonable because it was reviewed and accepted by the CPUC in 2018.
- b. The 2026 estimate is reasonable for this stage of the Project.
- c. The nominal cost growth between the 2017 and 2026 estimates is 245% before making adjustments for scope differences, general construction inflation, and other special factors. Adjusting only for general construction inflation means that the real, inflation-adjusted cost growth is 114%.

19. In my opinion, this 114% cost growth is not unexpected, given the impediments the Project has suffered between 2017 and 2026: COVID-19 and permitting and regulatory impediments. That cost growth is comparable to other large public infrastructure projects such as several projects which I discuss later.

20. Taking all this into consideration, it is my professional judgment that the 2026 MPWSP cost estimate is reasonable for its current stage of definition.



3. FUNDAMENTALS OF CONSTRUCTION COST ESTIMATING

22. Project planning revolves around many important factors and processes, the three most important generally being the project's scope, schedule, and cost and their interplay. The scope (size, underlying operating processes, and physical components) of a project is typically defined first in broad terms based on the owner's objectives. Then a schedule for the planning, design, and construction effort is developed. From this, a cost estimate will be prepared. If the estimated costs are unacceptable, the scope and schedule will be modified. This effort can continue even after the construction work is started. In other words, a project plan and estimate are not a "one-and-done" exercise. They are dynamic and depend on many factors, including current economic considerations and stakeholder input.
23. One important reason for preparing a cost estimate is to establish a plan and budget that is reviewed by the project owner and stakeholders in an authorization process. A cost estimate from an owner's point of view will thus include the fees and costs of the designers, contractors, and other associated parties, and the owner's internal project development and execution costs.
24. In turn, those costs will include the costs for labor (professional, supervisory, craft); the equipment and material (e.g. pipe, concrete, conduit) that constitute the project; construction equipment; subcontractors; and overhead and administrative resources for the companies involved.
25. A cost estimate such as the one being submitted at this time by California American Water to the CPUC is a combination of 1) actual costs incurred to date and 2) forecasted remaining costs. It is my understanding that these costs will ultimately be reviewed by the CPUC, so I did not focus extensively on incurred costs. I did briefly review them and found them to be reasonable from the perspective of an independent construction management review.



26. My main focus has been on the forecasted to-go costs. For forecasted remaining costs, California American Water relied on historical information that it and its engineering design consultants have accumulated from past projects. This is standard industry practice. Those estimates are typically based on past projects in which the designer or California American Water was involved. That information can come either from a project's schedule of values or from progress payment billing applications. Sometimes, external database services, such as R.S. Means cost data, are used.³
27. It is also important to remember that an estimate is a forecast, not a guarantee. When a consultant or owner prepares an estimate, they generally rely on historical information. The information also may not be as detailed as desired. It may be unit-cost-based (e.g., \$X per square foot of a building) rather than the individual unit costs for formwork, reinforcing steel, and concrete placement associated with installing a floor slab. Thus the estimate will have some imprecision.
28. Accordingly, an estimate needs to be updated to reflect any difference between when the underlying source data were collected and when the project will actually be built and historical cost information sources can be used.
29. One such reference source that was used by California American Water and its consultants to update historical cost information was the California Department of General Services (DGS) California Construction Cost Index (CCCI). That index is based upon the Building Cost Index (BCI) developed by Engineering News-Record (ENR) magazine for the San Francisco and Los Angeles regions. This magazine and its cost index system have existed for decades and are accepted references for comparing project costs at one point in time to another point in time. DGS's use and republication of the ENR information

³ Gordian, *RSMeans Data: Construction Cost Estimating Software*, (last visited October 14, 2026), <https://www.rsmeans.com/>.



indicates that the information is reasonable for state project cost estimates for the average project.

30. A CCCI adjustment is only the starting point for estimating the MPWSP's costs because it tracks cost changes for an average construction project. For reasons discussed later in this report, the MPWSP is not an average project, so additional measures must be considered to evaluate its costs.



4. THE PROJECT

4.1 PROJECT BACKGROUND

31. In 2012 California American Water proposed a desalination project that had a maximum capacity of 9.6 mgd or 6.4 mgd and included a desalination plant, source wells, various pipelines, and a brine pond. The plant was designed in a train or modular fashion. After California American Water submitted revised cost estimates in 2017, the CPUC ultimately approved a 6.4 mgd capacity project with certain provisions in 2018.⁴ However, the project was delayed and experienced cost increases because of interventions, Covid, a Project Labor Agreement (PLA), a Buy America Made in America (BAMA) requirement, and other factors, and California American Water is now filing an application to update the cost cap for the Project starting with construction and operation of a 4.8 mgd plant.

4.2 MPWSP COST ESTIMATES AND REASONABLENESS

32. I reviewed two cost estimates as part of this assignment: a 2017 estimate developed and used in California American Water's 2012 CPUC application and the cost estimate used to develop this 2026 application. That assignment required me to address a series of questions discussed in the following subsections.

4.2.1 Was the 2017 Estimate Reasonable?

33. Whether the 2017 estimate was reasonable is a necessary part of my analysis because it serves as a foundation to the question of "What is the percentage growth in the project's cost between 2017 and 2026?"

⁴ California Public Utilities Commission, *Order Modifying Decision (D.) 18-09-017, and Denying Rehearing of Decision, as Modified*, Decision 19-01-051, Application A.12-04-019 (Public Utilities Commission of the State of California, January 31, 2019), <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M262/K004/262004679.PDF>.



34. The cost estimate for the CPUC-approved 6.4 mgd project was \$279 million in 2017 dollars.⁵ It is reasonable to conclude that the CPUC would only approve a project if the Commission concluded that California American Water had presented a reasonable proposal. Thus, the 2017 estimate was reasonable. However, that \$279 million includes \$39.9 million of California American Water-only facilities costs.⁶ So the proper baseline for my analysis is \$239 million in 2017 dollars or \$387 million in 2026 dollars for the desalination facilities.⁷

4.2.2 The 2026 Estimate: Components and Reasonableness

35. My instructions were to review the components of California American Water's current cost estimate that are listed in Table 1. In other words, I was instructed to exclude other cost categories, such as the Allowance for Funds Used During Construction (AFUDC), from my analysis, and I did so.

36. The estimated cost is \$825 million for those portions of the Project in my scope of review; see Table 1. As mentioned earlier, my analysis accepts the costs incurred to date as being reasonable and reliable, so I will not comment on them in the following paragraphs.

Component #	Description	Costs \$ millions			6.4 to 4.8 Scope Sensitivity (Col 4)
		Costs To-Date (Col 1)	Forecast Remaining (Col 2)	Total (Col 3 = 1 + 2)	
1	Desalination Plant	\$13.0	\$270.0	\$283.0	Negligible
2	Source Wells	\$16.0	\$67.0	\$83.0	Somewhat
3	Outfall Improvements	\$9.0	\$51.0	\$60.0	Somewhat

⁵ Table 1 in Errata to the Direct Testimony of Jeffrey T. Linam, dated September 27, 2017.

⁶ Direct testimony of Lacy Carothers, Table 1.

⁷ California Department of General Services, Real Estate Services Division, *California Construction Cost Index (CCCI)* (last visited October 14, 2026), <https://www.dgs.ca.gov/RES/RESOURCES/Content/Real-Estate-Services-Division-Resources-List-Folder/DGS-California-Construction-Cost-Index-CCCI>. Mathematical adjustment using California Department of General Services Construction Cost index for September 2017 (6620) and for September 2026 (10717). $(10717 \times \$239 \text{ million} / 6620 = \$387 \text{ million})$.



4	Pipelines	\$6.0	\$142.0	\$148.0	Partial
5	Construction Inspection	\$0.0	\$20.0	\$20.0	None
6	Environmental, Regulatory, Permitting	\$105.0	\$22.0	\$127.0	Somewhat
7	Slant Test Well	\$11.0		\$11.0	None
8	Land	\$3.0		\$3.0	None
9	Company Labor, Overhead	\$19.0	\$14.0	\$33.0	Negligible
10	Contingency			\$57.0	
11	Total	\$182.0	\$586.0	\$825.0	

Table 1: Project Cost Estimate

4.2.2.1 The Desalination Plant Estimate Evaluation (Cost Component #1)

37. California American Water's cost estimate of the desalination plant is \$283 million. This estimate is based on a target-price design-build contract with CDM Smith in the amount of \$269,997,945, predicated on October 30, 2026 date for full contract authorization.⁸ The \$13 million difference between California American Water's \$283 million estimate and CDM Smith's contract amount of approximately \$270 million represents cost incurred to date. That contract amount was developed on an "open book" basis where California America Water and CDM Smith together reviewed and negotiated subcontract bids and benchmarks in a full manner. Open book reviews are generally considered in the construction industry to be a scrupulously reviewed and hence reliable source of information.
38. Because California American Water has a contract with CDM Smith, its costs can be considered "bid level" and thus present minimal cost risk to the Project unless there is a

⁸ CDM Smith, Monterey Peninsula Water Supply Project Desalination Plant – Target Price Proposal - Revised.



scope change or an unforeseeable condition. The inclusions, exclusions and other details of CDM Smith's proposal are reasonable and consistent with industry standard practices.

39. I therefore conclude that the \$283 million estimate for this project component is reasonable.

4.2.2.2 Source Well Estimate Evaluation (Cost Component #2)

40. California American Water's cost estimate of the Source Wells is \$83 million, and it has two components. First is a Boart Longyear proposal in the amount of \$29 million for the drilling of the wells and second is an estimate of \$38 million from a combination of California American Water's design consultant Michael Baker, Inc.'s engineer's estimate and California American Water estimated costs for associated works such as owner-furnished equipment. Even though the wells are designed, there is substantial risk to this work because it will be performed under the Pacific Ocean seabed.

41. Taking these subcomponents together, my review of California American Water's estimate for the Source Wells category (Cost Component #2) led me to conclude that the current estimate is reasonable.

4.2.2.3 Outfall Improvements Estimate Evaluation (Cost Component #3)

42. California American Water's cost estimate of the Outfall Improvements is \$60 million. California American Water's design consultant, Brown & Caldwell (B&C) Engineers, estimated costs for this component.⁹ One individual developed the estimates using historical cost information (the R.S. Means database and B&C collected data), and another person reviewed them to provide a quality control check. These information

⁹ Brown & Caldwell 7/8/2025 and 5/29/26 memos.



sources and procedures are standard industry practice. Also included in this category is an invoice from Monterey One Water for design services in the amount of \$5,803,154.¹⁰

43. Design for this component is 60% complete, meaning this is a Class 2 estimate so a higher contingency allowance is appropriate. This is blended with other Cost Components in Table 2 to develop the overall Project contingency.

44. It is my opinion that California American Water's estimate for the Outfall Improvements category (Cost Component #3) is reasonable.

4.2.2.4 Conveyance Pipelines Estimate Evaluation (Cost Component #4)

45. California American Water's cost estimate of the Pipelines is \$148.0 million and comprises four sub-components. California American Water's design consultant, AECOM Engineers (AECOM), estimated the costs of all sub-components.¹¹ Its estimates were developed using historical cost information and subject to the same quality control procedures described above for B&C. Both the information sources and this procedure are standard industry practice.

46. The pipeline design work is largely complete but there are some cost risks with this part of the work because it involves directional drilling and jack-and-bore (underground) work.

47. Based on my review of the engineer's estimates and other information concerning this work, it is my opinion that California American Water's estimate for the conveyance pipelines category (Cost Component #4) is reasonable from a construction management perspective.

¹⁰ Brown & Caldwell May 29, 2026 memorandum; Monterey One Water invoice, October 11, 2026.

¹¹ AECOM Monterey Peninsula Water Supply Project Transmissions Mains Cost Estimate, July 2026.



4.2.2.5 Construction Inspection Estimate Evaluation (Cost Component #5)

48. California American Water's estimate of construction inspection costs, \$20 million, is a combination of costs from a contract with West Yost and California American Water's internal forecasted costs. Thus, there is minimal risk associated with this cost category.
49. In projects of this size, it is common to use both internal and external resources for inspection. I have reviewed these details from a construction management perspective and accept this estimate as being reasonable.

4.2.2.6 Environmental, Regulatory, Permitting (Cost Component #6)

50. California American Water's estimate of Environmental, Regulatory, and Permitting work is a combination of costs incurred to date (\$105 million) and forecasted to-go costs (\$22 million). The forecasted to-go costs reflect the substantial risk of permitting challenges. I have reviewed these details from a construction management perspective and accept this estimate as being reasonable.

4.2.2.7 Test Slant Well Estimate Evaluation (Cost Component #7)

51. California American Water's cost estimate of the test Slant Well, \$11 million, is based entirely on costs incurred to date and no risk remains. I therefore accept this estimate as reasonable.

4.2.2.8 Land Estimate Evaluation (Cost Component #8)

52. California American Water's estimate of the Land costs, \$3 million, is based entirely on costs incurred to date and no risk remains. I therefore accept this estimate as reasonable.

4.2.2.9 Company Labor & Overhead Estimate Evaluation (Cost Component #9)

53. California American Water's cost estimate for Company Labor and Overhead is \$33 million. This is the sum of the costs incurred to date (\$19 million) and forecasted costs to go (\$14 million). California American Water developed the forecasted-to-go costs using



internal resources and protocols. I have reviewed these details from a construction management perspective and believe they are reasonable.

4.2.2.10 Contingency Estimate Evaluation (Cost Component #10)

54. A contingency allowance is customarily incorporated in a project cost estimate to reflect uncertainties and changes the project is likely to encounter. These uncertainties might include unexpected geotechnical, weather, labor availability, and quality conditions. In my experience, large contingency amounts are common on large projects such as the MPWSP.
55. For purposes of developing contingency measures, California American Water and its design consultants relied on a Recommended Practice (RP) from the Association for the Advancement of Cost Engineering (AACE).¹² The procedures expressed in this RP were developed and articulated over fifty years ago and are today accepted as standard industry practice.
56. That RP outlines classes of cost estimates (e.g., Class 5 for Concept Screening, Class 3 for Budget Authorization, and Class 1 for Bid Level), and the sources of information and procedures for preparing cost estimates. It also defines different expected accuracy ranges, meaning how the final actual costs compare to the estimated costs. Table 2 below summarizes the different estimate classes (column 1) and contingency ranges (column 4).

Estimate Class	Design Completeness	Purpose	Expected Contingency
Class 5	0% to 2%	Concept Screening	-50% to +100%
Class 4	1% to 15%	Feasibility Study	-30% to +50%
Class 3	10% to 40%	Budget Authorization	-20% to +30%
Class 2	30% to 70%	Control or Bid	-15% to +20%
Class 1	65% to 100%	Check or Bid	-10% to +15%

Table 2: Cost Contingencies

¹² AACE International, Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Process Industries, Recommended Practice Number 18R-97 (August 7, 2020).



57. To illustrate, a Class 2 estimate would be based on design that is between 30% and 70% complete (column 2), and final actual costs might be 15% less or 20% more (column 4) than estimated costs, unless there are scope changes. This range has a 50% confidence interval, meaning that 50% of projects should fall within this range.
58. California American Water developed its estimate for overall project contingency by assessing the design completeness and other risk drivers such as California American Water 's familiarity with the work for each of the individual cost components (e.g., Desalination Plant, Source Wells) listed in Table 1. It then applied the appropriate contingency percentage to each cost component and summed the individual amounts to get a grand Project-wide contingency amount. This is the preferred way to develop a comprehensive contingency estimate for a project, rather than estimating a single percentage for the entire project. Including contingencies on projects is a standard practice and if they are not included the cost estimate will be opaque and inaccurate.
59. Using the information in Tables 1 and 2, California American Water was able to develop Table 3, which summarizes the contingency levels and amounts for each of MPWSP's individual Cost Components. For instance, the Source Wells design is still underway, so California American Water applied a 20% contingency factor to this MPWSP cost component. This is consistent with AACE's expected upper bound of 20% for such an estimate.¹³ The entries in column 6 of Table 3 summarize my personal review of the how the contingency amounts were developed by California American Water. For instance, California American Water's estimates were based on contract amounts from contracts with third party construction contractors and service providers, the company's extensive experience with pipeline work, and work already finished, and on that basis, I concluded the contingency percentages expressed in column 4 were reasonable.

¹³ AACE International, Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Process Industries, Recommended Practice Number 18R-97 (August 7, 2020).



60. The next step was then to total all the contingencies for the individual Cost Components which resulted in a grand total of \$57 million. The project cost estimate before contingency is \$758 million (\$825 million - \$57 million), which means the contingency percentage is 7.5%. In my experience, that is reasonable for a project of this size and type. See Table 3.

Component #	Description	Costs \$ millions					Ibbs Notes (Col 6)
		Costs To- Date (Col 1)	Forecast Remaining (Col 2)	Total (Col 3 = 1 + 2)	Contingency % (Col 4)	Contingency \$ (Col 5= 2 x 4)	
1	Desalination Plant	\$13.0	\$270.0	\$283.0	5%	\$14	Bid received
2	Source Wells	\$16.0	\$67.0	\$83.0	20%	\$13	Design complete but subsea risks
3	Outfall Improvements	\$9.0	\$51.0	\$60.0	20%	\$10	60% design complete
4	Conveyance Pipelines	\$6.0	\$142.0	\$148.0	11%	\$16	Pipeline experience
5	Construction Inspection	\$0.0	\$20.0	\$20.0	0%	\$0	Bid received & C-A Water experience
6	Environmental, Regulatory, Permitting	\$105.0	\$22.0	\$127.0	20%	\$4	Some permits remain
7	Slant Test Well	\$11.0		\$11.0	0%	\$0	Work finished
8	Land	\$3.0		\$3.0	0%	\$0	Work finished
9	Company Labor, Overhead	\$19.0	\$14.0	\$33.0	0%	\$0	C-A Water experience
10	Contingency			\$57.0		\$57	
11	Total Project Costs	\$182.0	\$586.0	\$825.0			

Table 3: Contingency Computation

61. In summary, the approach and value at which California American Water arrived are reasonable and consistent with standard industry practices.



4.2.3 Growth Between 2017 and 2026 Estimates and Causes for Growth

62. The portions of the MPWSP that I was instructed to analyze were estimated to cost \$239.2 million and now in 2026 are estimated to cost \$825 million, a 245% increase in nominal terms.
63. The reasons for this growth rate, general industry inflation, COVID-19, interventions and permitting delays, the PLA and BAMA requirements, and the big project complexities, are addressed in the following paragraphs of this report.

4.2.3.1 Cost Growth Due to General Construction Inflation

64. Mr. Cook testified that the 2017 estimated cost for the MPWSP was \$279 million.¹⁴ However, after excluding project cost components that are no longer included in the 2026 MPWSP scope, the 2017 adjusted cost estimate would be \$239 million for the MPWSP.¹⁵ Next, adjusting the \$239 million for general construction inflation between 2017 and 2026, results in an estimate of \$387 million in 2026 dollars.¹⁶
65. Thus, there is a real cost increase of \$825 million / \$387 million = 114% in the Project's costs over and above general inflation for that time period.
66. That is the percentage of cost growth that is due to other factors, which I discuss in the following paragraphs.

¹⁴ Direct testimony of Christopher Cook, page 5.

¹⁵ Lacy Carothers Direct Testimony, Answer #44.

¹⁶ California Department of General Services, Real Estate Services Division, *California Construction Cost Index (CCCI)* (last visited October 14, 2026), <https://www.dgs.ca.gov/RES/RESOURCES/Page-Content/Real-Estate-Services-Division-Resources-List-Folder/DGS-California-Construction-Cost-Index-CCCI>. Mathematical adjustment using California Department of General Services Construction Cost index for September 2017 (6620) and for September 2026 (10717). $(10717 \times \$239 \text{ million} / 6620 = \$387 \text{ million})$.



4.2.3.2 Cost Growth Due to COVID-19

67. It is well known that the COVID-19 pandemic led to many direct and indirect cost impacts, from March 2020, when emergency declarations were first issued, until May 2023, when the public health emergency was declared over.¹⁷
68. Planning and design work could not be performed as collegially as is normally the case and was often disrupted and delayed, adding to Project costs.
69. Supply chain disruptions caused shortages and price spikes for materials and other resources; e.g. copper prices spiked to 700% at one time during the pandemic and are now 117% higher than they were in 2018.¹⁸ Pipe prices increased by 85% between February 2020 and May 2023.¹⁹ In some cases, the sourcing and delivery of materials were delayed and changed, leading to more expense. Fearful of not being able to obtain key resources as the pandemic unfolded and eventually ended, some employers retained workers and other resources (construction equipment, subcontractors) on paid stand-by terms, further adding to costs.

4.2.3.3 Cost Growth Due to Interventions and Permitting Delays

70. Another reason for the 114% cost increase is that interventions from third parties have lengthened the project development process. That means that California American Water's permitting and overhead costs have increased because of the delay. The

¹⁷ Office of Governor Gavin Newsom, *Governor Newsom Declares State of Emergency to Help State Prepare for Broader Spread of COVID-19* (March 4, 2020), <https://www.gov.ca.gov/2020/03/04/governor-newsom-declares-state-of-emergency-to-help-state-prepare-for-broader-spread-of-covid-19/>; *COVID-19 Pandemic*, Wikipedia (last visited October 14, 2026), [COVID-19 pandemic - Wikipedia](#).

¹⁸ <https://tradingeconomics.com/commodity/copper>.

¹⁹

https://www.bing.com/search?pglt=297&q=pipe+price+escalation+during+covid&cvid=b314037db02243dca1938c340abbf8ce&gs_lcrp=EgRIZGdIKgYIABBFgDkyBggAEEUYOTIGCAEQABhA0gEJMTU0MzlgMGo3qAIIIsAIB&FORM=ANNTA1&adppc=EDGEINJP&PC=DCTS.



California Coastal Commission coastal development permit and permitting process have imposed numerous conditions on the Project which contributes to its delay, and all these delays result in additional costs to the Project.

4.2.3.4 PLA and BAMA

71. Another reason for the 114% cost increase is PLA and BAMA requirements which mandate that labor on the Project be unionized and materials supplied to the Project be American-based. These conditions impose restrictions that cause cost increases.

4.2.3.5 Cost Growth Due to “Big Project” Complexities

72. Large public projects frequently experience significant cost growth over their construction lifetime. Some noteworthy contemporaneous examples include:
73. Costs for the Buffalo Bills football stadium grew 50%, from \$1.4 billion to \$2.1 billion, between 2022 and 2025.²⁰ This is largely outside the COVID-19 years.
74. The SoFi football stadium’s costs increased 100% over four years, from \$2.6 billion in 2016 to \$5.5 billion in 2020.²¹
75. The Federal Highway Administration has reported that construction costs increased 63% for large highway projects between 2020 and 2024.²²

²⁰ Alec Pow, *How Much Does Buffalo Bills New Stadium Cost?*, ThePricer (updated September 18, 2026), <https://www.thepricer.org/how-much-does-buffalo-bills-new-stadium-cost/>.

²¹ Sarah Whitfield, *How Much Did SoFi Stadium Cost to Build? A Detailed Breakdown*, BuildMat Insight (July 3, 2026), <https://buildmatinsight.com/construction-cost/app-cost/sofi-stadium-construction-cost-breakdown>.

²² Grace Truslow, *Rising Construction Costs: Analyzing the Contributors to Cost Escalations and the Impact on Federal Transportation Infrastructure Investments*, Eno Center for Transportation (August 2025), https://enotrans.org/wp-content/uploads/2025/08/Rising-Construction-Costs-White-Paper_Final.pdf.



76. These examples show that, though COVID-19 affected some of these projects to some degree, it does not explain the entire cost growth because some of the growth occurred well before and after when the pandemic was active.
77. Rather, there were other factors causing this cost increase. One is the complexity associated with the sheer size of such projects and hence a major increase in the number of project stakeholders. Those stakeholders have opinions, wants, and needs about the proposed project and thus time and cost are required to build a consensus for it to be completed.
78. Related to this is the fact that large projects like MPWSP take years to build. The underlying technologies that become a part of the project's operations may change over those years, resulting in design changes and cost increases. Aesthetic and political preferences and priorities may also change over time requiring design changes adding to cost.
79. Financing availability, constraints, and regulations may also affect overall project costs.
80. One additional factor that could only be qualitatively considered at this time concerns the escalation of costs past a 2026 start point. In paragraph 33 of this report, I updated the 2017 cost estimate to 2026 dollars yet the midpoint of some of the construction work will occur over multiple years and hence past a 2026 starting point. Those midpoints could not be determined with the available information, so I have considered this as a qualitative factor in assessing the 114% after-inflation cost growth for this Project.
81. Considering all this, MPWSP's cost growth of 114% is not surprising considering the experiences of other large comparable projects.

4.2.3.6 Adjustment for Plant Size

82. One other important factor that distinguishes the 2017 estimate from the 2026 estimate is plant size. The plant and appurtenances authorized in 2018 were for a 6.4 mgd system. The plant now proposed in the 2026 application is for 4.8 mgd with certain provisions that



will allow easy expansion if the plant is authorized in the future to scale up to 6.4 mgd capacity. However, it would be wrong to think that Project costs should be 25% less expensive ($4.8 \text{ mgd}/6.4 \text{ mgd} = 0.75$, hence 25%) if it scaled down from 6.4 mgd to 4.8 mgd.

83. One reason for this is the economic concept of fixed costs and variable costs. That is, some costs of the project do not change materially in proportion to the size of the project (fixed costs) and some do change in proportion to the size (variable costs).
84. I have reviewed the various cost components of this Project and have determined which components likely vary in proportion to the size scaling and assessed the sensitivity of each component to project size. My assessment is summarized in column 5 of Table 1 in this report, “6.4 to 4.8 Scope Sensitivity.”
85. Though there may be some cost reductions because of this 4.8 mgd phase of the plant, many of its aspects are not expected to change in a meaningful way because the 2026 MPWSP plan accommodates infrastructure for a 6.4 mgd phase of this project.
86. For example, the size reduction is not expected to meaningfully reduce the costs of the many parts of the Desalination Plant (#1), Outfall Improvements (#3), Pipelines (#4), Construction Inspection (#5), Environmental Permit Acquisition and Compliance (#6), Slant Well Test (#7), and Land (#8) components.
87. Some costs will increase, especially those which are time-dependent. For example, the schedule has lengthened the Project due to extensive regulatory processes and interdependencies, (#3 Environmental Permit Acquisition and Compliance) which are beyond the control of California American Water. There will be an associated cost increase as a result.
88. Contingency costs (#10) have increased because they are dependent on the costs of the other nine cost components and those other components have incurred cost increases since the 2017 estimate.



89. In summary, as I explained earlier in my report, assessing the reasonableness of a project's proposed cost such as MPWSP is a combination of quantitative and qualitative analysis. On that basis, I have concluded that the 114% real, after-inflation cost growth in this Project is reasonable for public projects of this size and nature.

5. SUMMARY & CONCLUSIONS

90. I conducted a thorough review of California American Water's cost estimate for the 2026 version of its MPWSP and reached the following conclusions:

91. The 2017 estimate of the MPWSP is reasonable because it was accepted by the CPUC.

a. The 2026 estimate is reasonable for this stage of the Project because it was developed from:

- i. Costs incurred to date, which, by definition, are reasonable and reliable because their recording and computation are subject to review by California American Water's GAAP-compliant accounting procedures and eventually to CPUC review. This applies to some parts or all of the Desalination Plant (Cost Component #1); Source Wells (#2); Outfall Improvements (#3); Conveyance Pipelines (#4); Construction Inspection (#5), Environmental Permit Acquisition & Compliance (#6); Slant Well Test (#7); Land (#8); and Company Labor, Overhead Categories (#9).
- ii. Contractual bids from contractors for the Desalination Plant (#1), Slant Wells (#2), and Construction Inspection fees (#5), which I examined and concluded are reasonable.
- iii. Engineer's estimates from California American Water's experienced design consultants for Source Wells (#2); Outfall Improvements (#3); and Pipelines (#4), which I examined and concluded are reasonable.



- iv. California American Water's own internal historical information for Construction Inspection (#5) and Company Labor and Overhead (#9), which I concluded are reasonable.
 - v. The Contingency (#10) amount that California American Water has applied to the estimate is reasonable.
- b. The nominal cost growth between the 2017 and 2026 estimates is 245% before making adjustments for scope differences, general construction inflation, and other special factors. Adjusting only for general construction inflation means that the real, inflation-adjusted cost growth is 114%.
- c. In my opinion, this 114% cost growth is not unexpected, given the impediments the Project has suffered over the past nine years: COVID-19, the PLA and BAMA requirements, permitting and regulatory impediments, and the Project's size and complexity.

92. Taking all this into consideration, it is therefore my professional judgment that the MPWSP 2026 cost estimate is reasonable for its current stage of definition.



6. APPENDIX A: WILLIAM IBBS CV





Dr. William Ibbs

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Education

B.S. and M.S. Civil Engineering,
Carnegie Mellon University

Ph.D. Civil Engineering,
U.C. Berkeley

Minors in Accounting and Finance

Associations

American Society of Civil Engineers
(ASCE)

Expertise

Construction Management

Loss of Productivity

Project/Program Management

Change and Change Impacts

Change Management

Consequential Damages

Standard of Care

Schedule Delays & Disruptions

Damage Calculations and Audits

Loss of Economic Value

Cost Estimating & Project Control

Industries

Construction

William Ibbs is professor emeritus of the Construction Management program in the civil engineering department at the University of California at Berkeley. He taught both undergraduate and graduate courses in construction management.

In addition to his academic career Professor Ibbs is a very active consultant, chairing The IBBS Consulting Group. He has served as an expert witness and project neutral for over thirty years, qualifying to testify in federal and state courts, and international arbitration. Dr. Ibbs's academic research work includes the impact project change has on labor productivity, schedule, and cost. His academic research has led to a vibrant consulting practice on matters involving construction project management, accounting, cost estimating and control, scheduling, and control systems.

Dr. Ibbs and his company have worked on some of the biggest, most complex projects in the world including Boston's Big Dig, refineries and process plants, commercial facilities, hospitals, transit systems, and powerplants. Clients include various large, global private sector and public entities throughout the US, Africa, Asia, Europe, the Middle East, and South America.

He has also testified before the California senate and currently chairs the California High Speed Rail Peer Review Committee.

Prior to his academic career, Dr. Ibbs worked in industry as a project engineer and project manager on design and construction projects. Much of that work included using project control systems. He also has been a part of two different construction software ventures.

Because of his professional standing Professor Ibbs has chaired various professional construction management committees.

