

MEETING OF THE BOARD OF DIRECTORS OF THE  
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

Jointly with the  
**PLANNING & OPERATIONS COMMITTEE**

July 5, 2016, 8:30 a.m.  
MWDOC Conference Room 101

Teleconference Site:  
20989 Park Lane  
Rollins, MT 59931  
(406) 844-2282

(Members of the Public may attend and participate in the meeting  
at both locations.

**P&O Committee:**

Director L. Dick, Chair  
Director S. Hinman  
Director J. Finnegan

Staff: R. Hunter, K. Seckel,  
H. De La Torre, K. Davanaugh,  
J. Berg

Ex Officio Member: W. Osborne

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MWDOC Committee meetings are noticed and held as joint meetings of the Committee and the entire Board of Directors and all members of the Board of Directors may attend and participate in the discussion. Each Committee has designated Committee members, and other members of the Board are designated alternate committee members. If less than a quorum of the full Board is in attendance, the Board meeting will be adjourned for lack of a quorum and the meeting will proceed as a meeting of the Committee with those Committee members and alternate members in attendance acting as the Committee.

**PUBLIC COMMENTS** - Public comments on agenda items and items under the jurisdiction of the Committee should be made at this time.

**ITEMS RECEIVED TOO LATE TO BE AGENDIZED** - Determine there is a need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda. (Requires a unanimous vote of the Committee)

**ITEMS DISTRIBUTED TO THE BOARD LESS THAN 72 HOURS PRIOR TO MEETING --**  
Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection in the lobby of the District's business office located at 18700 Ward Street, Fountain Valley, California 92708, during regular business hours. When practical, these public records will also be made available on the District's Internet Web site, accessible at <http://www.mwdoc.com>.

**DISCUSSION ITEM**

1. STATE WATER RESOURCES CONTROL BOARD HEARINGS

**INFORMATION ITEMS** (The following items are for informational purposes only – background information is included in the packet. Discussion is not necessary unless a Director requests.)

2. SUMMARY OF RECENT DOHENY COST WORKSHOP
3. MWDOC LETTER TO THE REGIONAL BOARD ON THE POSEIDON PROJECT
4. STATUS REPORTS
  - a. Ongoing MWDOC Reliability and Engineering/Planning Projects
  - b. WEROC
  - c. Water Use Efficiency Projects
  - d. Water Use Efficiency Programs Savings and Implementation Report
5. REVIEW OF ISSUES RELATED TO CONSTRUCTION PROGRAMS, WATER USE EFFICIENCY, FACILITY AND EQUIPMENT MAINTENANCE, WATER STORAGE, WATER QUALITY, CONJUNCTIVE USE PROGRAMS, EDUCATION, DISTRICT FACILITIES, and MEMBER-AGENCY RELATIONS

## **ADJOURNMENT**

**NOTE:** At the discretion of the Committee, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated, and may be subject to action by the Committee. On those items designated for Board action, the Committee reviews the items and makes a recommendation for final action to the full Board of Directors; final action will be taken by the Board of Directors. Agendas for Committee and Board meetings may be obtained from the District Secretary. Members of the public are advised that the Board consideration process includes consideration of each agenda item by one or more Committees indicated on the Board Action Sheet. Attendance at Committee meetings and the Board meeting considering an item consequently is advised.

Accommodations for the Disabled. Any person may make a request for a disability-related modification or accommodation needed for that person to be able to participate in the public meeting by telephoning Maribeth Goldsby, District Secretary, at (714) 963-3058, or writing to Municipal Water District of Orange County at P.O. Box 20895, Fountain Valley, CA 92728. Requests must specify the nature of the disability and the type of accommodation requested. A telephone number or other contact information should be included so that District staff may discuss appropriate arrangements. Persons requesting a disability-related accommodation should make the request with adequate time before the meeting for the District to provide the requested accommodation.



**DISCUSSION ITEM**

July 6, 2016

**TO: Planning & Operations Committee**  
**(Directors Dick, Hinman, Finnegan)**

**FROM: Robert Hunter**  
**General Manager**

Staff Contact: Harvey De La Torre

**SUBJECT: STATE WATER RESOURCES CONTROL BOARD HEARINGS**

**STAFF RECOMMENDATION**

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Staff recommends the Planning & Operations Committee review and discuss this information.

**SUMMARY**

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This report provides a summary of the State Water Resources Control Board (1) Public hearing, held on June 22, regarding the proposed drinking water fee regulations; and (2) the July 26, Public Hearing on the petition request to change the Point of Diversion.

**REPORT**

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**SWRCB Proposed Drinking Water Fee Regulations**

On June 22, 2016, the California State Water Resources Control Board (State Board) held a public hearing in regards to the State Board's proposed fee regulations for its Drinking Water Program (Program), as required by SB 83 (2015). The fees collected are to reimburse the State Board's costs in administering the Safe Drinking Water Act that regulates public water systems throughout the State of California.

Although the proposed fees seek to recover the total costs of the program, the recommendation to shift a large portion of the program's costs onto the larger system with no nexus to cost of service does create inequity among the different size water systems.

Budgeted (Y/N): N	Budgeted amount: n/a	Core _X_	Choice __
Action item amount: n/a	Line item:		
Fiscal Impact (explain if unbudgeted):			

Based on the Board's request, MWDOC, along with five other member agencies<sup>1</sup>, joined in on our comment letter to the State Board (see attached). In addition, Syrus Devers of BBK testified at the June 22 public hearing on behalf of MWDOC.

Below are the key points Mr. Devers made at the hearing:

- MWDOC has a unique perspective since it represents all of Orange County, which includes everything from very large water districts to districts with less than 10,000 service connections.
- MWDOC supports ACWA's alternative proposal of a declining per-connection fee structure for large water systems because it sets fees for the Drinking Water Program at levels that better reflect the costs of service that large systems place on State Board's resources.
- MWDOC is concerned about the disparate impacts between large and small districts caused by the staff proposal. For it is not fair or reasonable to raise the fees on only the large systems. Smaller water systems need to pay their fair share of the program costs and be assessed the increase in fees according to the benefits and services they receive from the program.
- The State Board proposal adopts a linear model where fees increase in direct relationship to the number of service connections. This ignores the economy of scale achieved by larger water districts, and results in extreme fee increases that are out of proportion to the fees currently being paid.
- By providing more rate tiers, and a lower fee-per-connection in the top tier, the alternative proposal more fairly distributes the cost of the program across water systems of all sizes, avoids extreme fee increases as compared to current levels, and still adequately funds the Program.

We estimated that there approximately 15 speakers that provided comments to the Board, including Metropolitan and ACWA.

Below are the next steps:

	Estimated Timeframe (2016)
<b>Water Board Receives Comments: End of Public Comment Period and Public Hearing</b>	June 22, 2016
<b>Water Board Considers Comments</b>	on or after June 23, 2016
<b>Board Meeting - Consideration for Adoption</b>	September 20, 2016

<sup>1</sup> The five member agencies included in MWDOC's comment letter to the State Board include: El Toro Water District, South Coast Water District, Yorba Linda Water District, and the Cities of Garden Grove and Fountain Valley.



**State Board Public Hearing on the petition request to change the Point of Diversion**

One of the key California WaterFix Project permits is the approval by the State Board in changing the point of diversion for the State Water Project and the Central Valley Project. It is a water right permit for new points of diversion for the project's three new intakes.

Earlier this month, the State Board established a revised schedule for the public hearing to consider the petition. Due to the complexity of the issue and the number of speakers, the State Board will take the hearing into three parts (1A, 1B, and 2).

On July 26, 2016, Part 1A of the hearing will be a technical presentation on the project description, engineering design & modeling, and project operations. Moreover it will focus on the effect of the three new points of diversions on other legal water right holders. It will include testimony from State Natural Resource Secretary John Laird, DWR Director Mark Cowin, and Bureau of Reclamation representatives to address the questions:

- Do these new diversions alter water flows or affect water quality in a way that injures any legal user of the water?
- Does the project in effect initiate a new water right?

Part 1B will have all other parties (estimated to be over 100) present their evidence on addressing these questions and the project operations. Part 1B will commence on October 20, 2016 and opening briefs for Part 1B are due September 1, 2016.

After the finalization of the Environmental Impact Report and Biological Opinions, which is expected in early 2017, Part 2 will review the impacts to fish and wildlife and will develop "appropriate flow" criteria.



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*Director*

Jeffery M. Thomas  
*Director*

Robert J. Hunter  
*General Manager*

#### MEMBER AGENCIES

City of Brea  
City of Buena Park  
East Orange County Water District  
El Toro Water District  
Emerald Bay Service District  
City of Fountain Valley  
City of Garden Grove  
Golden State Water Co.  
City of Huntington Beach  
Irvine Ranch Water District  
Laguna Beach County Water District  
City of La Habra  
City of La Palma  
Mesa Water District  
Moulton Niguel Water District  
City of Newport Beach  
City of Orange  
Orange County Water District  
City of San Clemente  
City of San Juan Capistrano  
Santa Margarita Water District  
City of Seal Beach  
Serrano Water District  
South Coast Water District  
Trabuco Canyon Water District  
City of Tustin  
City of Westminster  
Yorba Linda Water District

June 22, 2016

Jeanine Townsend, Clerk to the Board  
State Water Resources Control Board  
1001 I Street, 24th Floor  
Sacramento, California 95814

Dear Ms. Townsend,

**Re: Municipal Water District of Orange County's comments on  
the Proposed Drinking Water Fee Regulations**

The Municipal Water District of Orange County (MWDOC) would like to thank the State Water Resources Control Board (State Board) for giving us the opportunity to submit comments on the Proposed Drinking Water Fee Regulations (Proposal). MWDOC, a wholesale water agency to 28 cities and water agencies in Orange County, provides over 220,000 acre-feet of imported water per year, which is slightly less than half of the County's water demand. We are also a member of the Metropolitan Water District of Southern California (MET), which is the nation's largest wholesaler of urban water supply.

We recognize the importance of the State Board's Division of Drinking Water's (DDW) role and responsibility in ensuring safe, reliable drinking water throughout the State of California. Moreover, we understand the current fees do not generate sufficient revenue to cover the existing Drinking Water Program's (Program) costs. Therefore, we support the effort to establish new fee regulations to properly recover the Program's total cost of service. However, we suggest the Proposal require additional revisions and modifications to achieve the State Board's goal of creating a more equitable source of funding that MWDOC and other water agencies can support.

Below are MWDOC's comments to the proposed drinking water fee regulations:

***The proposed fee regulations create inequity among the different size water systems.***

MWDOC finds the proposed per connection fee decrease, from \$6/connection to \$4/connection for smaller water systems<sup>1</sup>, to be counterproductive as the current fees do not sufficiently recover the Program's costs. Moreover, we find the DDW spends significantly more time and resources (approximately \$60 per service connection) to provide regulatory and technical review for smaller water systems, which creates an imbalance between the fees charged and the benefits/services received among the different water systems. As a result, the allocation of increased fees for large water systems not only lacks the cost of service nexus but in fact creates more inequity. Typically, larger water systems have in-house resources and staff that reduce the need for DDW's program services, but the Proposal substantially increases the fees for larger water systems when no additional services or benefits will be received.

***MWDOC supports the Association of California Water Agencies' (ACWA) alternative proposal of declining per-connection fees for large water systems with a modification that increases fees for smaller systems.***

MWDOC finds ACWA's alternative proposal of a declining per-connection tier structure more equitably allocates costs for large water systems. It accounts for the economies of scale in determining the level of fees by recognizing the fact that larger water systems have additional resources and staff that reduces the need of DDW program services while still maintaining an adequate funding level for the program to operate.

However, because the current fees have not collected the necessary funds to fully recover the Program's costs from both the large and small water systems, we believe there should be increases for small water systems. It is not fair or reasonable to raise the fees on only the large water systems. Smaller water systems need to pay their fair share of the program costs and be assessed the increase in fees according to the benefits and services they receive from the Program.

There are many small systems that can afford an increase and do not need to be subsidized. However, it is important to note that MWDOC does not identify small

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<sup>1</sup> Small water systems are defined as community water systems that serve 1,000 service connections or less; and large water systems are community water systems that service more 1,000 service connections

June 22, 2016

and disadvantaged communities to be similar. We believe it is justifiable to provide a discounted per connection fee for disadvantaged communities (those with household incomes less than 60 percent of the statewide median) that require more assistance because of limited technical and/or financial resources.

***Revise the wholesaler's fee structure to include a base fee plus hourly-fee-for-serve charge.***

As a wholesale water agency, we understand that wholesale water systems can vary widely in their complexity and services provided. As such, the proposed fee regulations to charge wholesalers based on "total production" can be problematic. The numerous changes from year to year, due to water fluctuations in supplies and demands, can greatly affect the Program's revenue stability. In addition, total production can result in a situation whereby consumers pay multiple times for the same delivery of water for situations where there are intermediary wholesalers, such as within the MET service area. This results in duplicate fees that are not representative of the DDW's cost of service. To avoid such problems, MWDOC recommends setting a fee structure with a base fee plus hourly fee for service. It would prevent overcharging for the same delivery of water and ensure stable revenue and correlate with actual cost of service.

In conclusion, MWDOC supports the development of new fee regulations that fully funds the total costs of the Program. However, the State Board's Proposal needs further revisions and modifications to ensure costs are allocated in a fair and equitable manner, preventing the double billing and cross-subsidization among the different water systems. Therefore, we ask the State Board to work with the technical workgroup on revising the fee regulations similar to ACWA's alternative proposal of a declining tier structure, and modify the fee-for-service model for wholesale water system.

If you have any questions, please contact me at (714) 593-5026 or at [rhunter@mwdoc.com](mailto:rhunter@mwdoc.com).

Sincerely,



Robert J. Hunter  
General Manager  
Municipal Water District of O.C.



Andrew Brunhart  
General Manager  
South Coast Water District



June 22, 2016



Robert R. Hill  
General Manager  
El Toro Water District

Marc Marcantonio  
General Manager  
Yorba Linda Water District



Cel Pasillas  
Interim Water Manager  
City of Garden Grove



Mark Sprague  
Utilities Manager  
City of Fountain Valley



## INFORMATION ITEM

July 5, 2016

**TO: Planning & Operations Committee**  
(Directors Dick, Hinman, Finnegan)

**FROM: Robert Hunter, General Manager**

Staff Contact: Karl Seckel

**SUBJECT: SUMMARY OF RECENT DOHENY COST WORKSHOP**

### STAFF RECOMMENDATION

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Staff recommends the Planning & Operations Committee receives and files the report.

### COMMITTEE RECOMMENDATION

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Committee recommends (To be determined at Committee Meeting)

### OVERVIEW

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On June 22, South Coast Water District held a Workshop on the Doheny Ocean Desalination Project where they discussed the project delivery options and their consulting team from GHD presented their current cost estimate for three variations of the project. The Workshop was well attended and besides Karl Seckel and Director Susan Hinman from MWDOC, included representatives from MNWD, SMWD, San Juan and San Clemente. GHD provided input to the Board on delivery of the project with information they had gotten from contractors, DBO teams and financial consultants. They also provided the initial updated cost estimate (the full details are still being evaluated) and they considered many financial issues with respect to the cost of the project. They did not get into what would consist of the justification for the project other than to compare the cost of the project to the cost of MET water. For their base financial analysis:

- They assumed 2% financing via SRF funding

- For the 15 mgd project, when accounting for their suggested financing terms and the updated MET incentive (up to \$450 per AF) the GHD “NET project costs” were very similar, but slightly higher (about \$100 per AF or so) compared to what MWDOC had previously developed. They have initially assumed they would need permanent Fe and Mn treatment facilities whereas our final plan was to pump out and dispose of the water containing large amounts of Fe and Mn.

They outlined three projects:

1. 5 mgd with infrastructure expandable to 15 mgd
2. 15 mgd project
3. 4 mgd project not as expandable, more just for South Coast only

One of the interesting pieces of input they got from their survey work is that the DBO teams were not keen on taking on the risk of the slantwell water production and water quality. The perception out there is that this is NEW technology and so the risk should remain with the agency. It was recognized that the work proceeding in Monterey may eliminate this perception as it proceeds along.

The GHD team did a good job of running through the slides to help the board understand the various financial issues. They asked the Board to weigh in on the myriad of variables to help focus GHD’s upcoming efforts since there are so many variables in the financial equation. The Board will provide input at a subsequent meeting.

Attached are the presentation slides from the meeting.

SOUTH COAST  
WATER DISTRICT

*Partnering With The Community*



# Doheny Desalination Project

Project Delivery Method  
Board of Directors Workshop #2

June 22, 2016





# Agenda

- High Level Recap of Project Delivery Board Workshop #1
- Review of Project Delivery Market Survey
- Preliminary Cost Estimates, 5 MGD and 15 MGD Production Capacity
- Financial Analyses



# Workshop #1 High Level Recap

- Operation & Maintenance
- Asset Ownership
- Timing & Approach to Project Phasing
- Funding Approach
- Risk Allocation
- Project Delivery Models
  - Design Build with a short operation period: “DBo”
  - Design Build with full private sector Operation and Maintenance: “DBOM”
  - Full private sector delivery, including financing: “PPP”



# Results of Market Survey

- Developed questions related to 5 MGD Seawater Desalination Project Delivery and Risk Allocation
- Delivered to firms experienced in delivering seawater desalination projects and executing P3 projects both in California and abroad
- Received 8 responses from an even blend of General Contractors, RO Process Providers/O&M Companies, and Financiers
- Relatively Consistent Responses
- Many of these Organizations Are Eager for the Project to proceed and to be asked to bid. (This is good news!)



## Feedback: Financing and PPP

- The 5MGD project is small for a pure private sector funded PPP. Cutoff values of \$100 million or more were mentioned. Projects toward \$1 billion were mentioned as more the optimum range. This aligns with GHDs experience.
- PPP will incur a longer transaction time and higher transaction costs. The advice varies on the time, but in excess of 6 months additional time. Additional transaction costs for all parties for legal fees, and additional margins for various additional entities.



## Feedback: Scope and Risk

- Many responses insisted that the District take responsibility/risk for the Slant Wells and in particular the water quantity and quality produced by them.
- Responses varied on the question of length of operation term. Arguments were made for longer and shorter.

# Slant Well Production and Water Quality

- If the water from the Slant Wells has a quality as predicted in the modelling, including an improvement over time, then there is an argument to reduce the cost of pre-treatment, and therefore the cost of water.
- The responses from the private sector suggest this is a risk they will not be willing to take. So this is a key area where the district must form its own view on the risk/reward equation.

# Feedback: Innovative Concepts

Some innovative Concepts were raised in the feedback:

- Using SRF Loan as part of a PPP deal. Further investigation is needed to understand if this is possible, and the risk transfer in this arrangement.
- Having the District build the wells, and the remainder as a PPP deal.
- Loading financing costs into the future cost of water, so that the near term cost is lower, and the long term cost is higher. This will raise the final total NPV, but reduce the near term premium in cost above the MET rate.

## Summary of Feedback

- PPP will add to the cost of water over the life of the project, largely due to the size of the project having to absorb the transaction costs.
- Finding a way to minimize the risk (or perception of risk) related to the water quality from the slant wells will reduce the risk investment from contractors and reduce the cost of water.
- In any case, the choice is actually open, as the market will accept full or part PPP, or short or long term DBO.



# Market Survey

## Project Basis

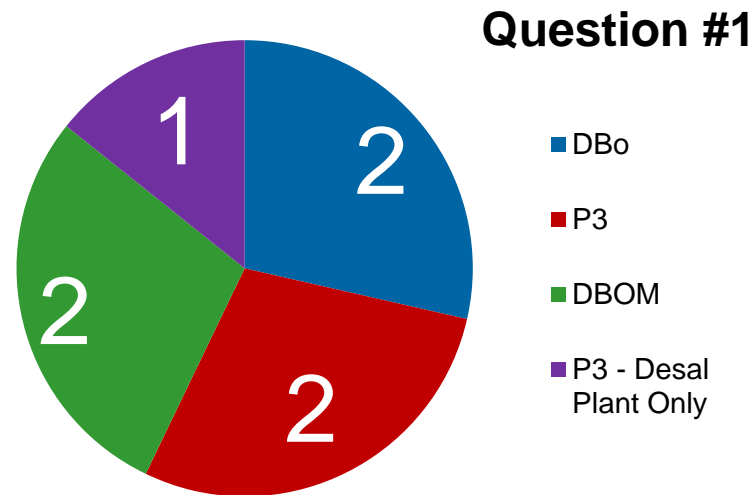
- Phase One – 5 MGD Production Capacity
- ~ \$90 million Capital Cost
- ~\$5 million Annual Operating Cost
- Slant Wells, Raw Water Conveyance Pipeline, Desalination Facility



# Market Survey

## Question 1

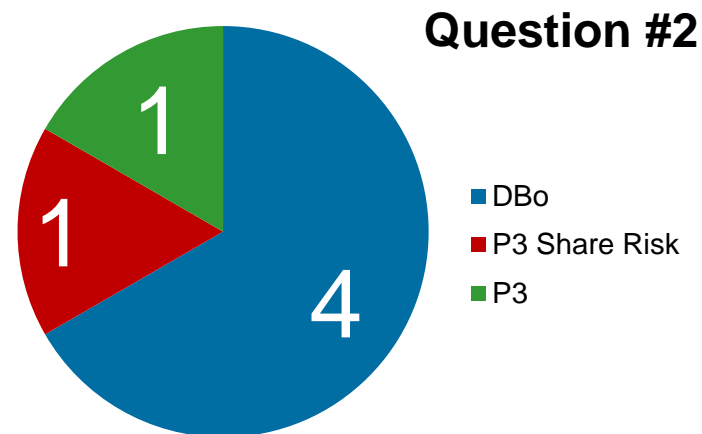
Which of these contract mechanisms would be a preference for your company?  
Please include specific reasons and the benefits to the District.



# Market Survey

## Question 2

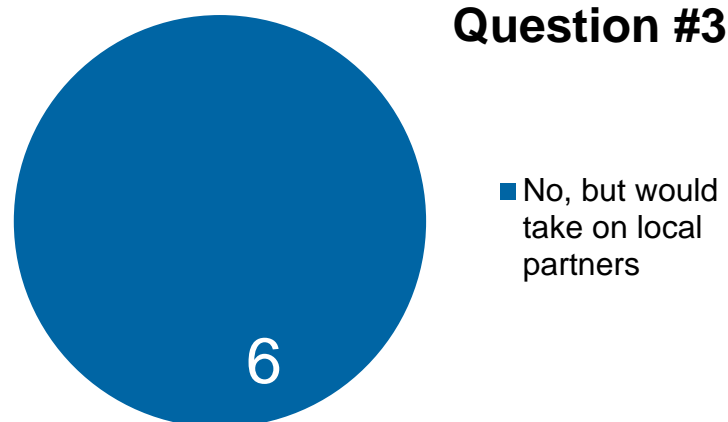
In your view which of these mechanisms is most suitable for a contract of this size and scope?



# Market Survey

## Question 3

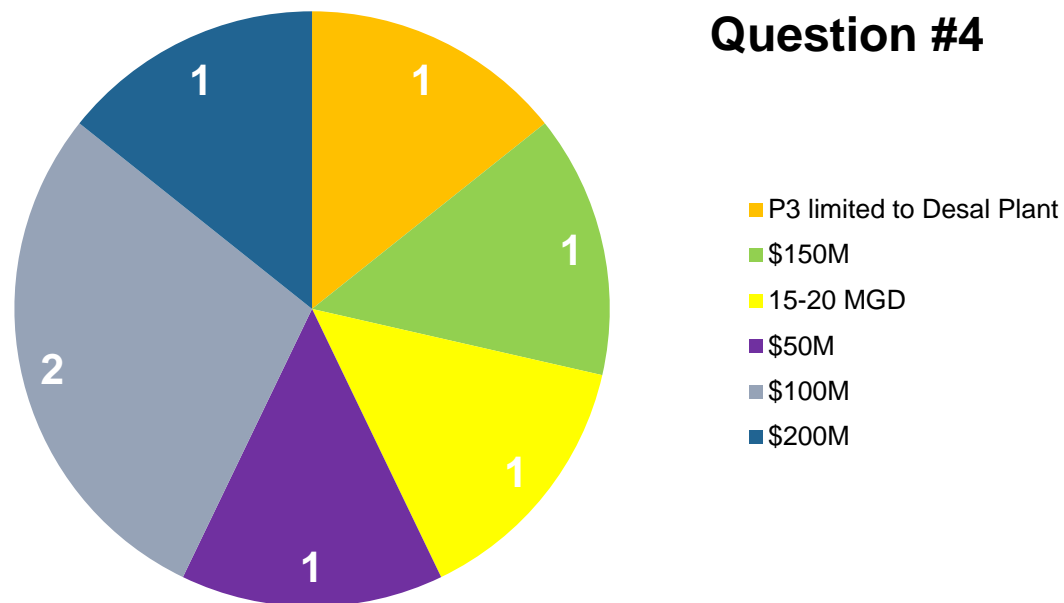
Would you need to create some form of alliance or joint-venture with other companies to be able to bid for a project under each of these mechanisms?



# Market Survey

## Question 4

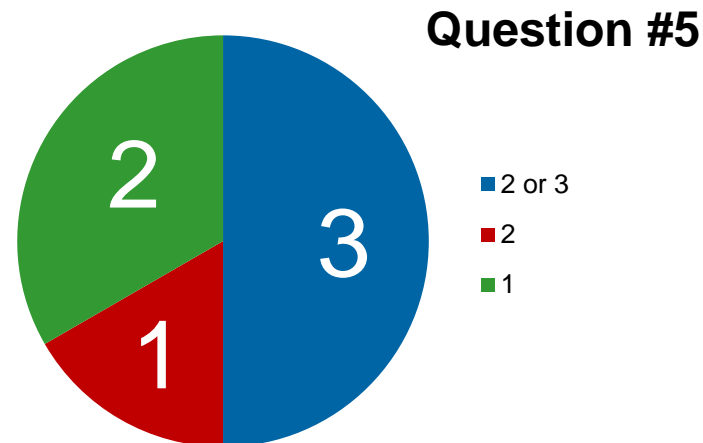
Do you think any of these mechanisms would be more suited to this project if it was smaller or greater in value? If so please provide a sense of the value of the cut-off for such a decision?



# Market Survey

## Question 5

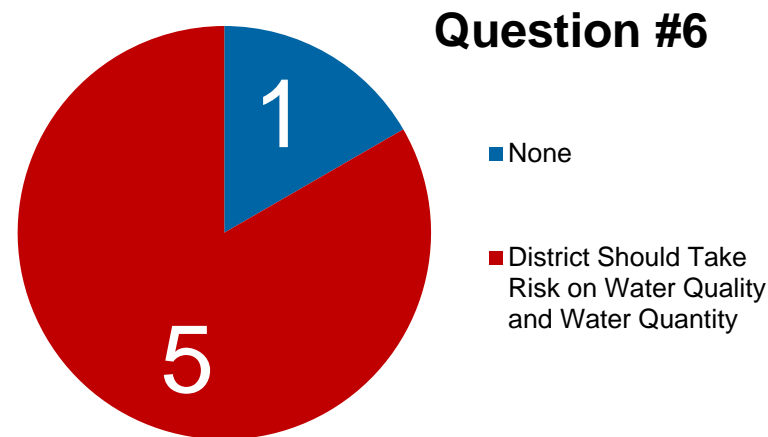
The Project includes pipelines, subsurface slant wells, and the desalination plant itself. In your view should these different elements be combined into one project, or do you believe they should be separate contracts?



# Market Survey

## Question 6

Slant wells are a relatively new approach for seawater desalination. What is your view of the risks associated with these, and how any such risks for both construction and operation should be handled in the contract(s)?



# Market Survey

## Question 7

Do you have a view on the time frame for executing the contract based on these different approaches?

*Answers varied*





# Market Survey

## Question 8

The timeframe for executing future expansion phases is not currently known. How does this level of uncertainty affect your preference towards a project delivery method?

*Answers varied*



# Preliminary Cost Estimates



# Preliminary Cost Estimates

## **Project # 1**

### **5 MGD Production Capacity Seawater Desalination Facility *with Common Infrastructure for Future Expansion***

- Certain areas of the project are sized for Ultimate Buildout of 15 MGD
  - Raw Water Conveyance Pipeline
  - RO Building and Electrical Building Structures
  - Product Water Storage Tank
  - Brine Disposal Tank
  - Chemical Storage Facilities

## **Project # 2**

### **15 MGD Production Capacity Seawater Desalination Facility**

## **Project # 3**

### **4 MGD Production Capacity *with Minimal Additional Infrastructure***

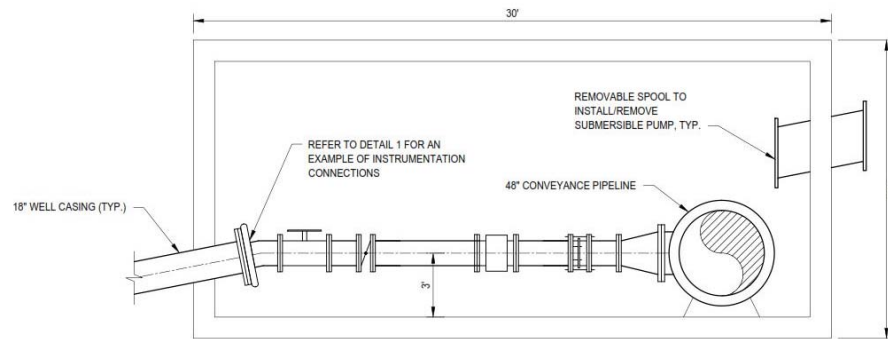


# Overview

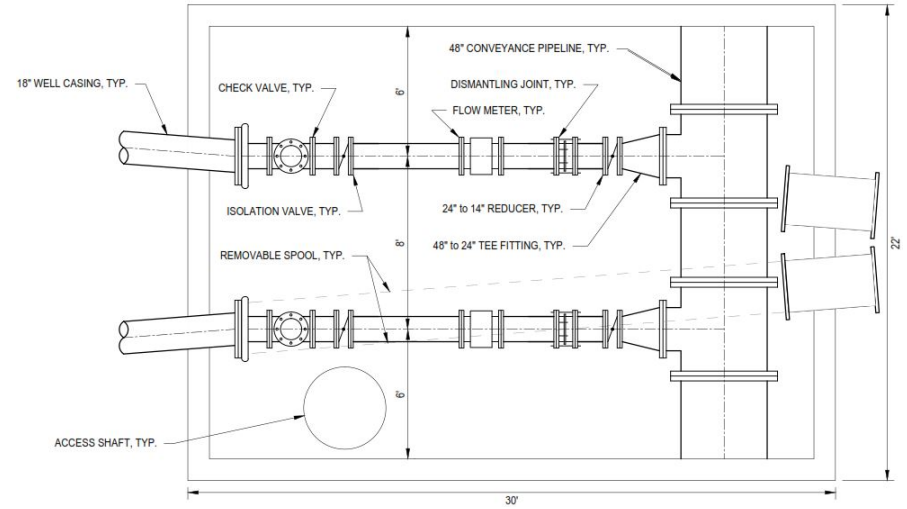
## Project Area



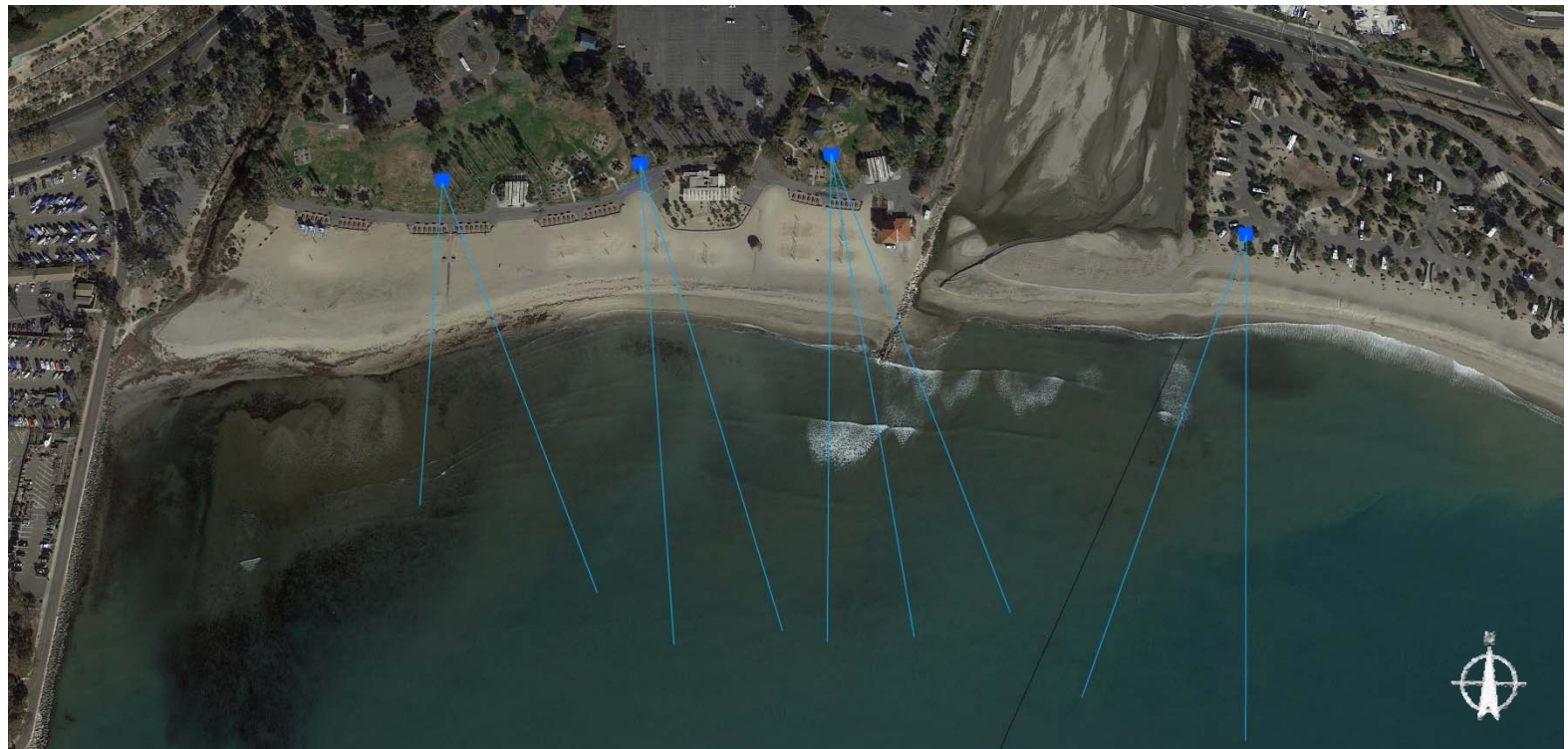
# Preliminary Well Layout and Vault Details



WELLHEAD SECTION VIEW



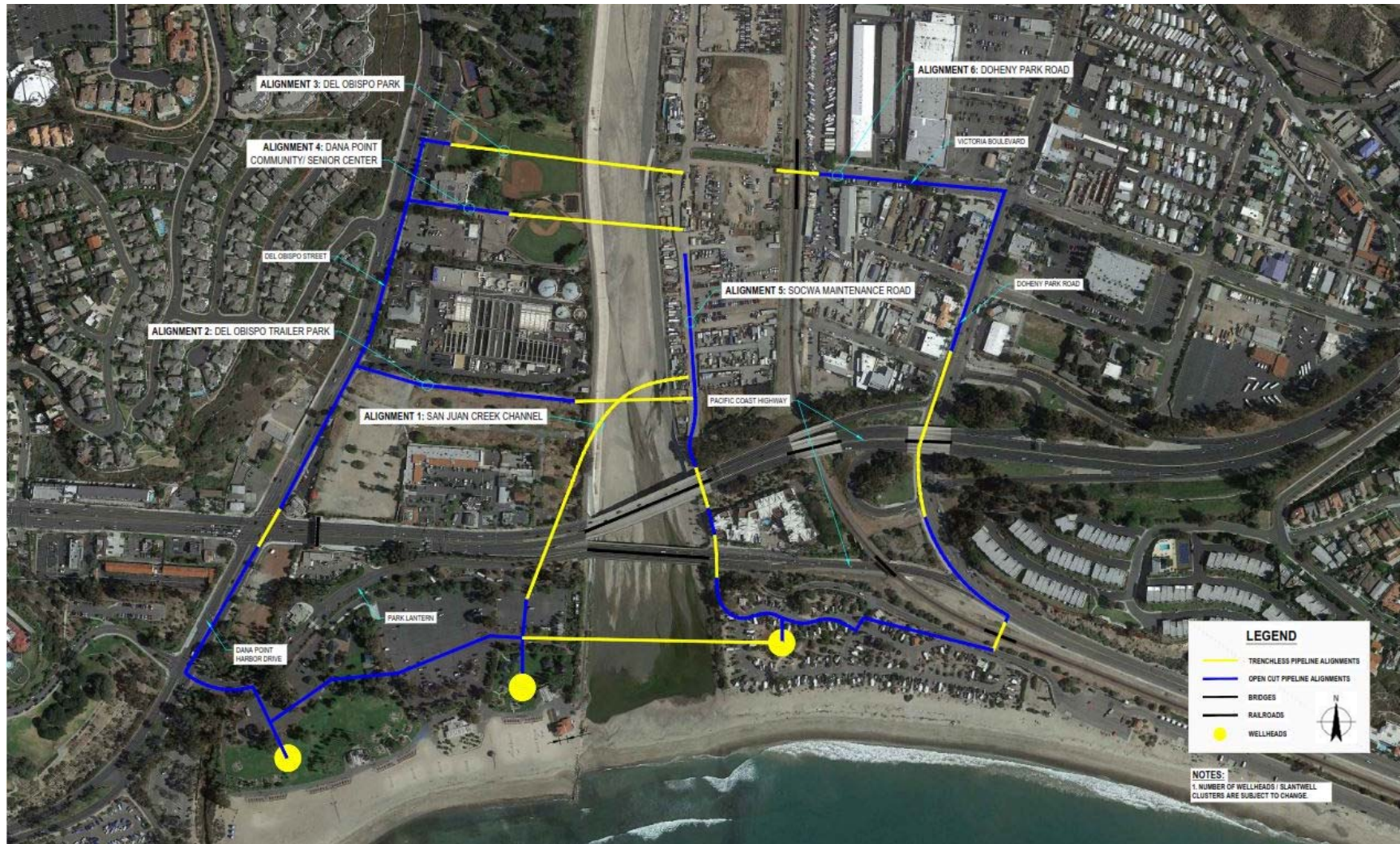
WELLHEAD PLAN VIEW





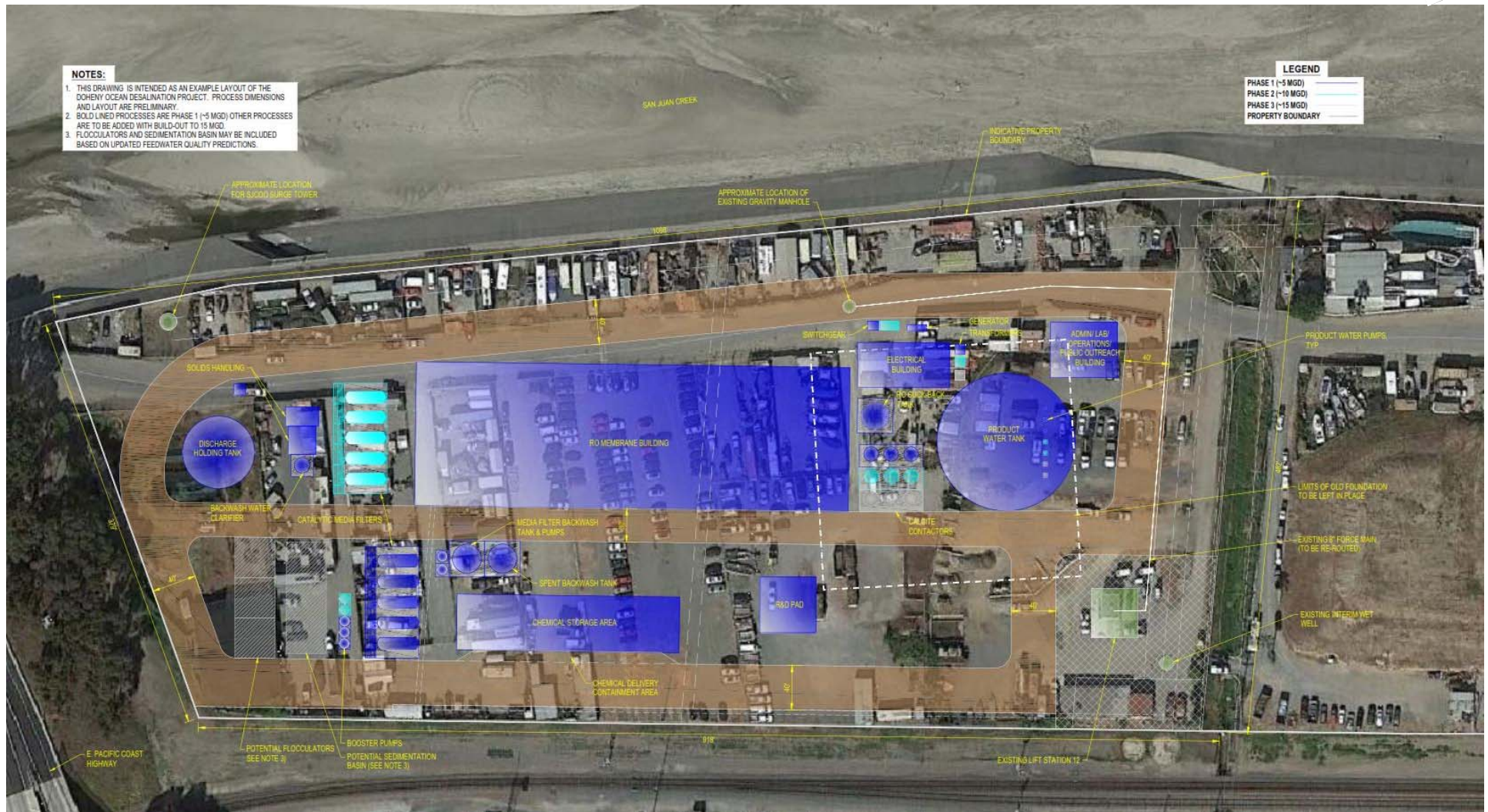
# Overview

## Raw Water Pipeline Alignments

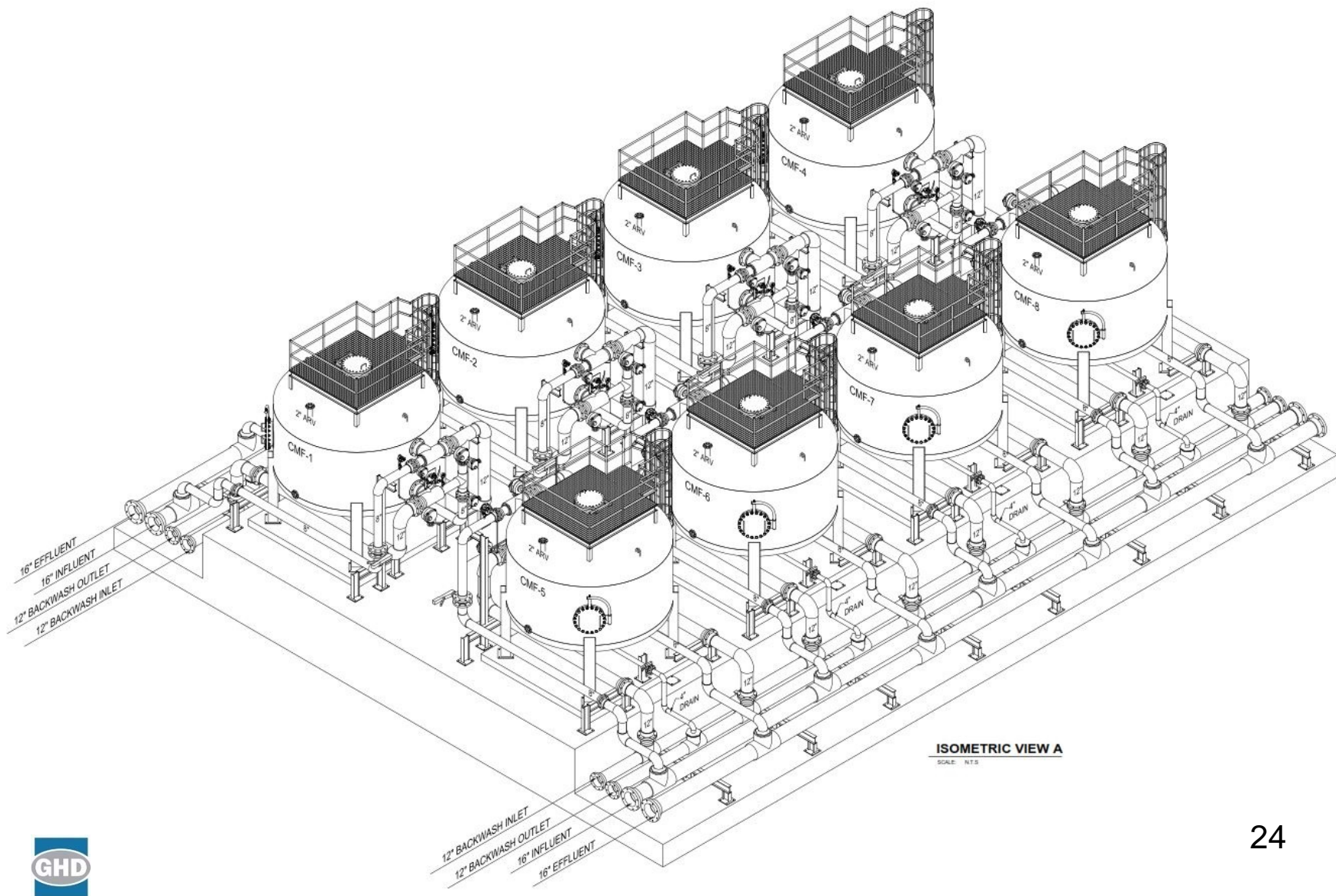




# Preliminary Plant Site Layout

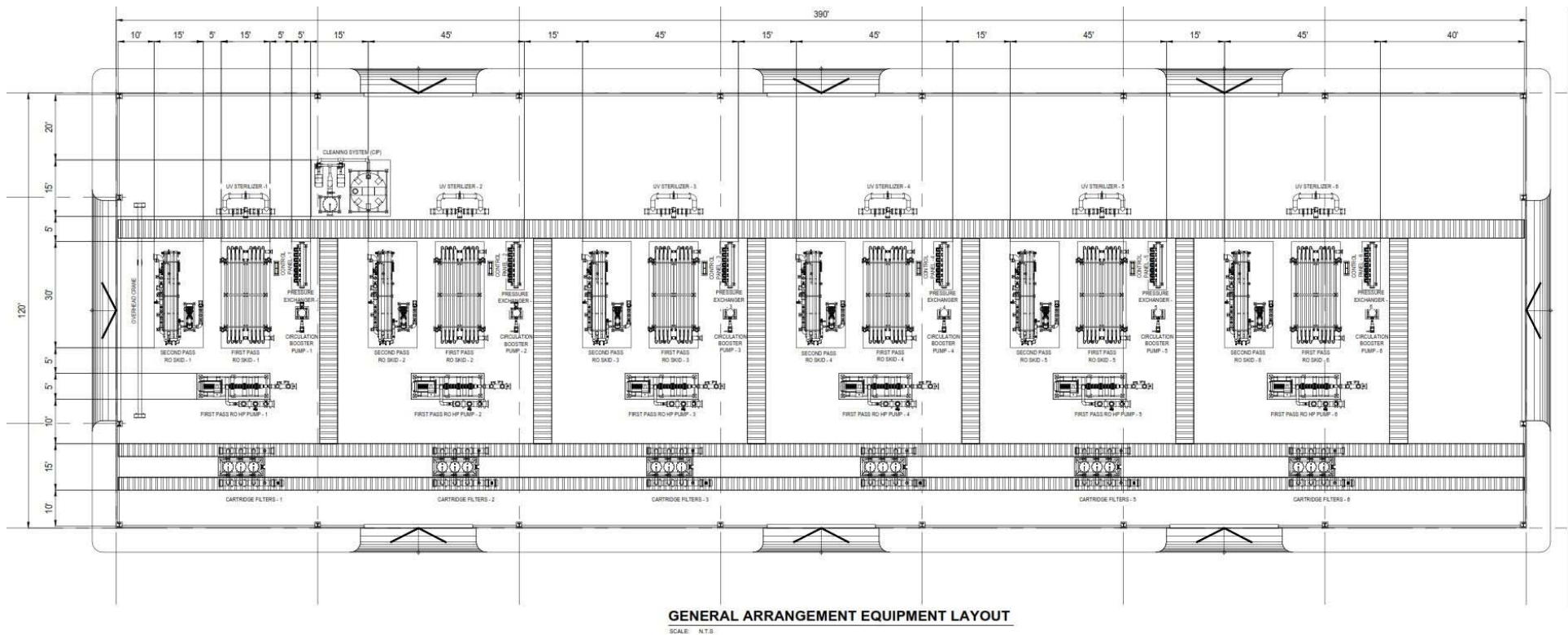


# Preliminary Catalytic Media Filters



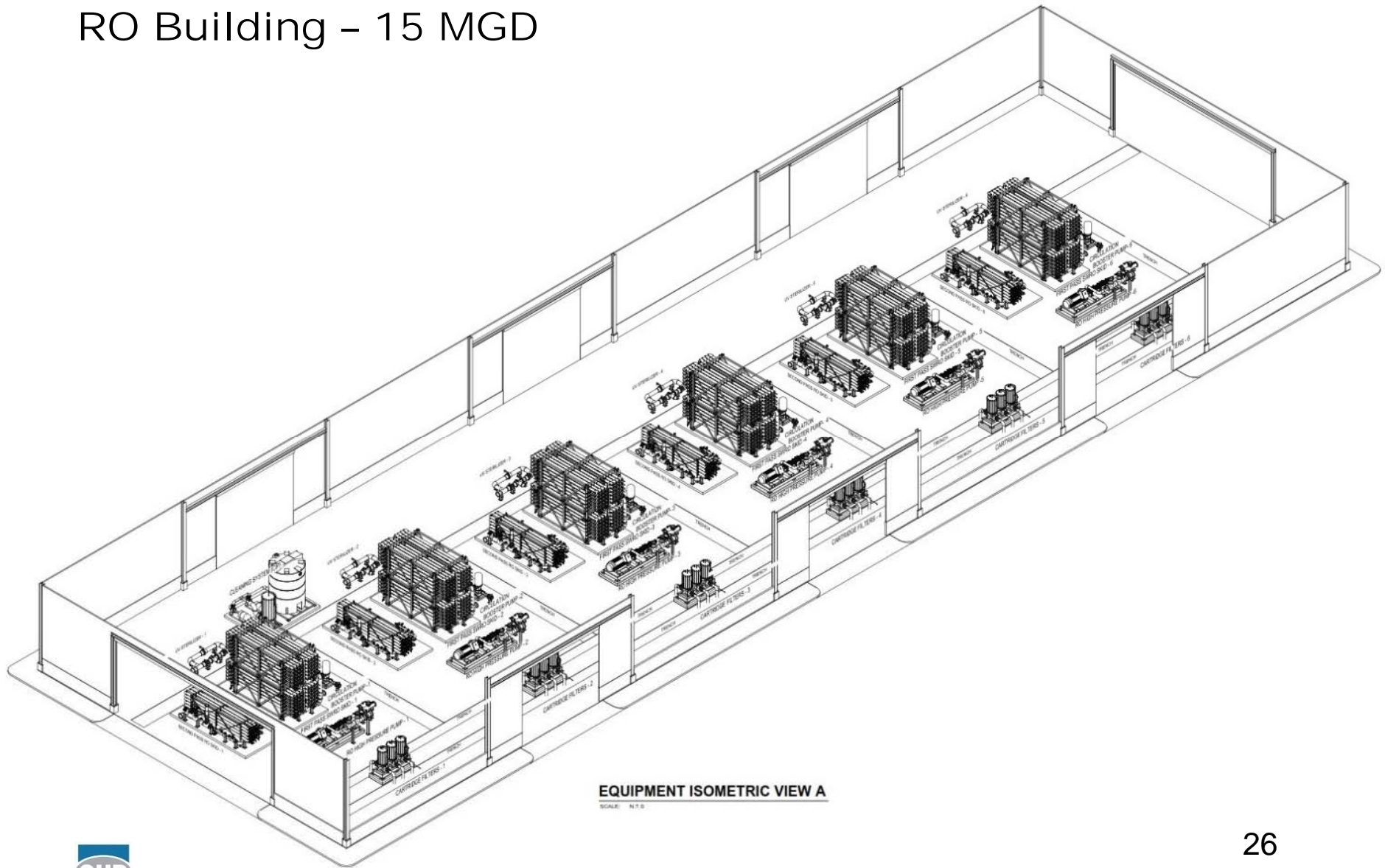


# Preliminary RO Building (15 MGD Full Build Out – Approx. 400 ft x 120 ft)

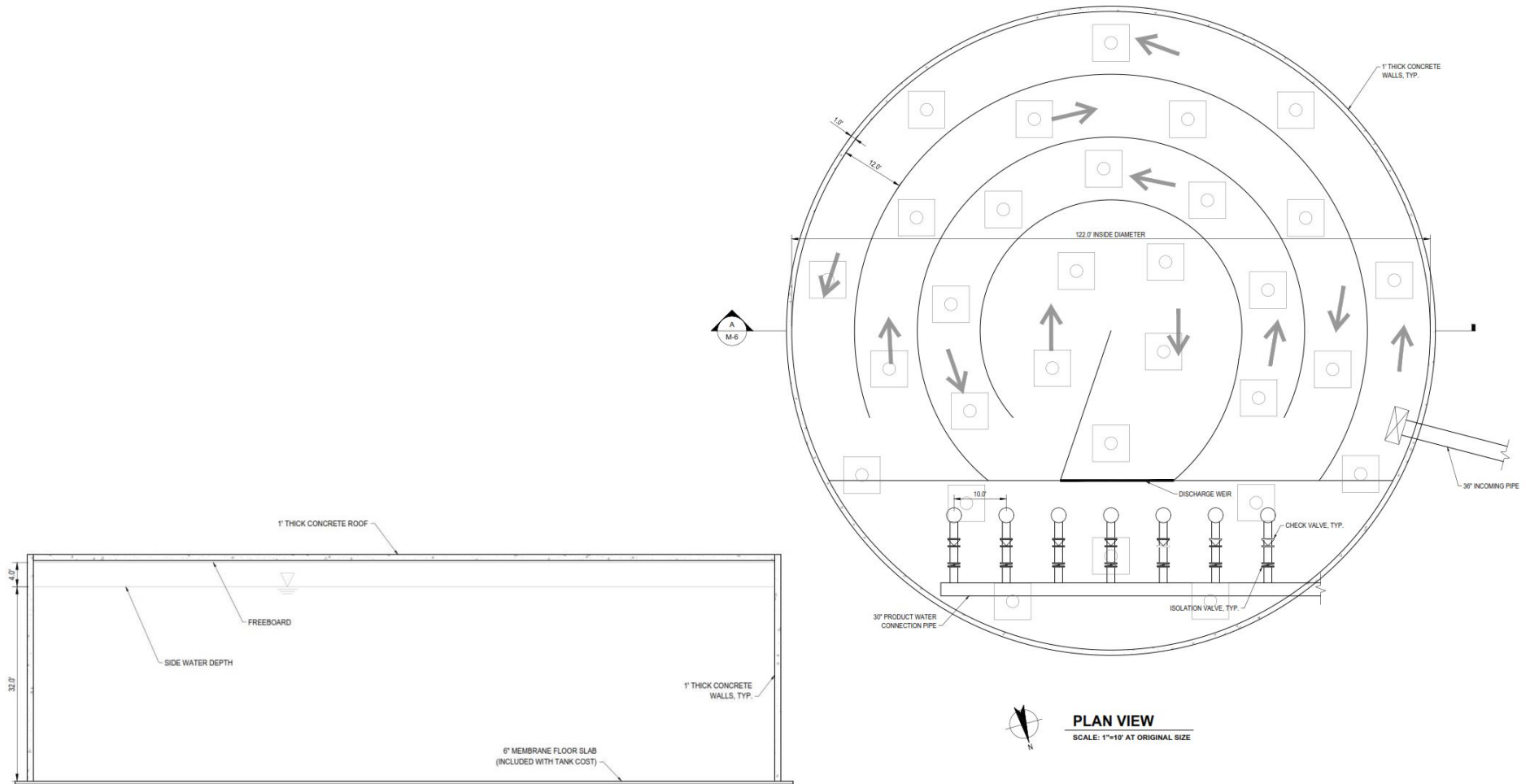


# Overview

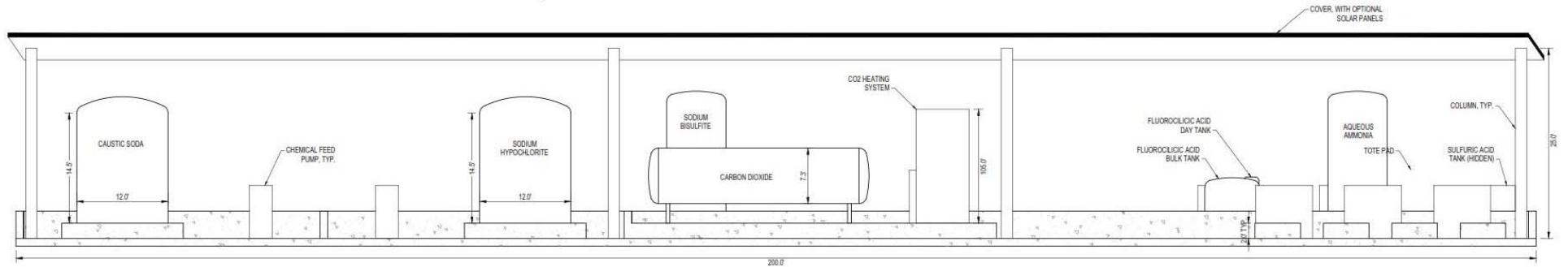
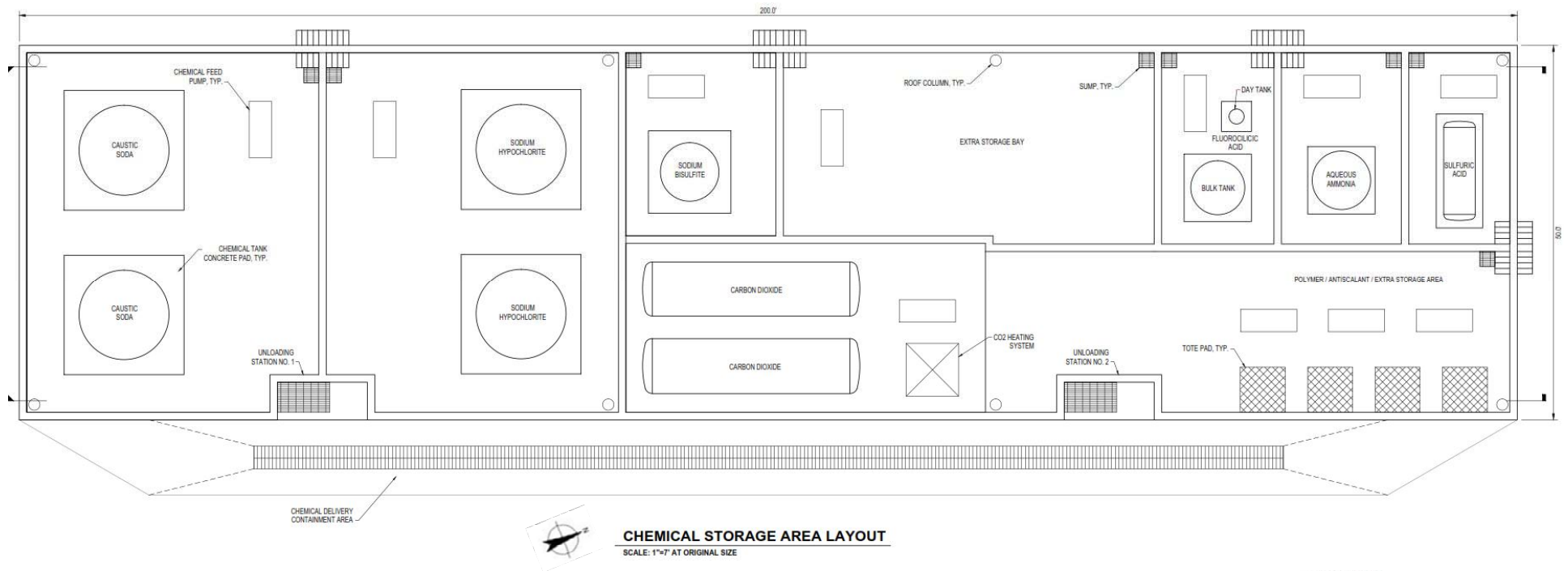
## RO Building – 15 MGD



# Preliminary 2.75 MG Product Water Tank



# Preliminary Chemical Storage Area



28

# Preliminary Cost Estimate

## Project #1

### 5 MGD with Additional Infrastructure

Items sized for ultimate capacity of 15 MGD:

- Raw water conveyance pipeline
- RO & Electrical Building Structures
- Product Water Storage Tank
- Brine Disposal Tank
- Chemical Storage Facilities

Iron and Manganese Pretreatment assumes worst case level of treatment.

Item No	Description	Construction Cost
1	Slant Well Intake (3 duty/1 standby slant wells, pump, electrical)	\$13,326,000
2	Raw Water Conveyance Pipeline (Doheny Park Road Alignment)	\$9,169,000
3	Site Work (Soil overex/recompact, grading, drainage, yard piping, concrete, etc)	\$ 16,577,000
4	Buildings (RO Building, Admin/Control Building, Electrical Building)	\$3,948,000
5	Electrical Equipment (Transformers, switchgear, MCC, allowance for SDG&E)	\$4,424,000
6	Iron and Manganese Pretreatment System (Flocculation/Sedimentation and Catalytic Media Filtration )	\$7,200,000
7	Reverse Osmosis Treatment System (2 Trains of SWRO and Partial Second Pass RO)	\$9,152,000
8	Post Treatment with Calcite Contactors (Calcite contact vessels)	\$785,000
9	Chemical Storage and Dosing Facilities (Chemical storage tanks, dosing pump skids, ancillaries)	\$1,115,000
10	Solids Handling Facilities (Clarifier, Centrifuge, etc.)	\$730,000
11	Brine Disposal Facilities via Existing Ocean Outfall (0.5 MG storage tank, pump station and connection to outfall)	\$1,382,000
12	Product Water Storage Tank and Distribution Pumps (2.75 MG storage tank and product water pumps)	\$2,692,000
13	<b>Subtotal Construction Line Item Costs</b>	<b>\$70,500,000</b>



# Preliminary Cost Estimate

Project # 2

15 MGD

Item No	Description	Construction Cost
1	Slant Well Intake (7 duty/2 standby slant wells, pump, electrical)	\$29,962,000
2	Raw Water Conveyance Pipeline (Doheny Park Road Alignment)	\$9,169,000
3	Site Work (Soil overex/recompact, grading, drainage, yard piping, concrete, etc)	\$ 16,577,000
4	Buildings (RO Building, Admin/Control Building, Electrical Building)	\$3,948,000
5	Electrical Equipment (Transformers, switchgear, MCC, allowance for SDG&E)	\$11,772,000
6	Iron and Manganese Pretreatment System	\$21,600,000
7	Reverse Osmosis Treatment System (SWRO and Partial Second Pass RO)	\$24,289,000
8	Post Treatment with Calcite Contactors (Calcite contact vessels)	\$2,075,000
9	Chemical Storage and Dosing Facilities (Chemical storage tanks, dosing pump skids, ancillaries)	\$1,789,000
10	Solids Handling Facilities (Clarifier, Centrifuge, etc.)	\$1,411,000
11	Brine Disposal Facilities via Existing Ocean Outfall (0.5 MG storage tank, pump station and connection to outfall)	\$1,459,000
12	Product Water Storage Tank and Distribution Pumps (2.75 MG storage tank and product water pumps)	\$3,476,000
13	<b>Subtotal Construction Line Item Costs</b>	<b>\$127,527,000</b>



# Preliminary Cost Estimate

## Project 3

### 4 MGD w/minimal Additional Infrastructure

- Minimal components sized for ultimate capacity
- Reduced standby capacity

Item No	Description	Construction Cost
1	Slant Well Intake (3 duty/ 0 standby slant wells, pump, electrical)	\$10,099,000
2	Raw Water Conveyance Pipeline, Smaller Diameter (Doheny Park Road Alignment, Ability to Pipe Burst)	\$8,420,000
3	Site Work (Soil overex/recompact, grading, drainage, yard piping, concrete, etc)	\$14,744,000
4	Buildings (5 MGD Size RO Building, Admin/Control Building, Electrical Building)	\$2,897,000
5	Electrical Equipment (Transformers, switchgear, MCC, allowance for SDG&E)	\$4,106,000
6	Iron and Manganese Pretreatment System (Flocculation/Sedimentation and Catalytic Media Filtration )	\$6,936,000
7	Reverse Osmosis Treatment System (2 Trains of SWRO and Partial Second Pass RO)	\$9,152,000
8	Post Treatment with Calcite Contactors (Calcite contact vessels)	\$785,000
9	Chemical Storage and Dosing Facilities (Chemical storage tanks, dosing pump skids, ancillaries)	\$969,000
10	Solids Handling Facilities (Clarifier, Centrifuge, etc.)	\$667,000
11	Brine Disposal Facilities via Existing Ocean Outfall (0.1MG storage tank, pump station and connection to outfall)	\$575,000
12	Product Water Storage Tank and Distribution Pumps (2.75 MG storage tank and product water pumps)	\$1,362,000
13	<b>Subtotal Construction Line Item Costs</b>	<b>\$60,712,000</b>





# Contingency, Contractor OH&P, Engineering

- Developed Three Example Scenarios
  - 1: District does further technical work to reduce unknowns, District finances entire project, and assumes Risk related to slant wells
  - 2: Same as 1, but District does less upfront work to quantify unknowns
  - 3: Project is executed under a full P3 with all Risk assumed by the contractor. No additional work is done by District to quantify unknowns

	1	2	3
Contingency	12.5%	15%	25%
Allowance for “Known Unknowns”	3%	8%	10%
Contractor OH, Profit, Taxes	10%	12%	15%
Engineering	6%	7%	12%





# Preliminary Cost Estimate

## Contingency – Case 1

Item No	Description	% Applied	\$ Amount	Subtotal (\$)	Comments
13	Construction Line Item Cost (Project Size 1 – 5 MGD)			\$70,500,000	
14	Contingency	12.5	\$8,813,000	\$79,313,000	12.5% of Item 13
15	Allowance for “Known Unknowns”	3	\$2,115,000	\$81,428,000	3% of Item 13
16	Contractor OH&P	10	\$8,143,000	\$89,571,000	10% of Subtotal in Item 15
17	Engineering	6	\$4,230,000	\$93,801,000	6% of Item 13
18	<b>Total Construction Cost:</b>			<b>\$93,801,000</b>	
19	-15%:			\$79,731,000	
20	+20%:			\$112,561,000	

- +/- inline with AACE Class 3 Estimate (-10% to -20% on the low side, and +10% to +30% on the high side.)



# Preliminary Cost Estimate

## Contingency – Case 2

Item No	Description	% Applied	\$ Amount	Subtotal (\$)	Comments
13	Construction Line Item Cost (Project Size 1 – 5 MGD)			\$70,500,000	
14	Contingency	15	\$10,575,000	\$81,075,000	15% of Item 13
15	Allowance for “Known Unknowns”	8	\$5,640,000	\$86,715,000	8% of Item 13
16	Contractor OH&P	12	\$10,406,000	\$97,121,000	12% of Subtotal in Item 15
17	Engineering	7	\$4,935,000	\$102,056,000	7% of Item 13
18	<b>Total Construction Cost:</b>			<b>\$102,056,000</b>	
19	-15%:			\$86,748,000	
20	+20%:			\$122,467,000	



# Preliminary Cost Estimate

## Contingency – Case 3

Item No	Description	% Applied	\$ Amount	Subtotal (\$)	Comments
13	Construction Line Item Cost (Project Size 1 – 5 MGD)			\$70,500,000	
14	Contingency	25	\$17,625,000	\$88,125,000	25% of Item 13
15	Allowance for "Known Unknowns"	10	\$7,050,000	\$95,175,000	10% of Item 13
16	Contractor OH&P	15	\$14,276,000	\$109,451,000	15% of Subtotal in Item 15
17	Engineering	12	\$8,460,000	\$117,911,000	12% of Item 13
18	<b>Total Construction Cost:</b>			<b>\$117,911,000</b>	
19	-15%:			\$100,224,000	
20	+20%:			\$141,493,000	



# Preliminary Cost Estimate

## Summary Table

	Project #1 5 MGD w/Expansion	Project #2 15 MGD	Project #3 4 MGD (w/Min. Add. Infr.)
Construction Line Item Cost	\$70.5M	\$127.5M	\$60.7M
Contingency(15%)	\$10.6M	\$19.1M	\$9.1M
Allowance for “Known Unknowns”(8%)	\$5.6M	\$10.2M	\$4.9M
Contractor OH&P (12%)	\$10.4M	\$18.8M	\$8.9M
Engineering (7%)	\$4.9M	\$8.9M	\$4.3M
<b>Total Construction Cost</b>	<b>\$102 Million</b>	<b>\$185 Million</b>	<b>\$88 Million</b>
-15%	\$86.7M	\$156.9M	\$74.7M
+20%	\$122.5M	\$221.5M	\$105.5M



# Economics



# Economics

Capital Cost

Operating Cost

Areas of Uncertainty

Different Project Sizes

Financing Cost

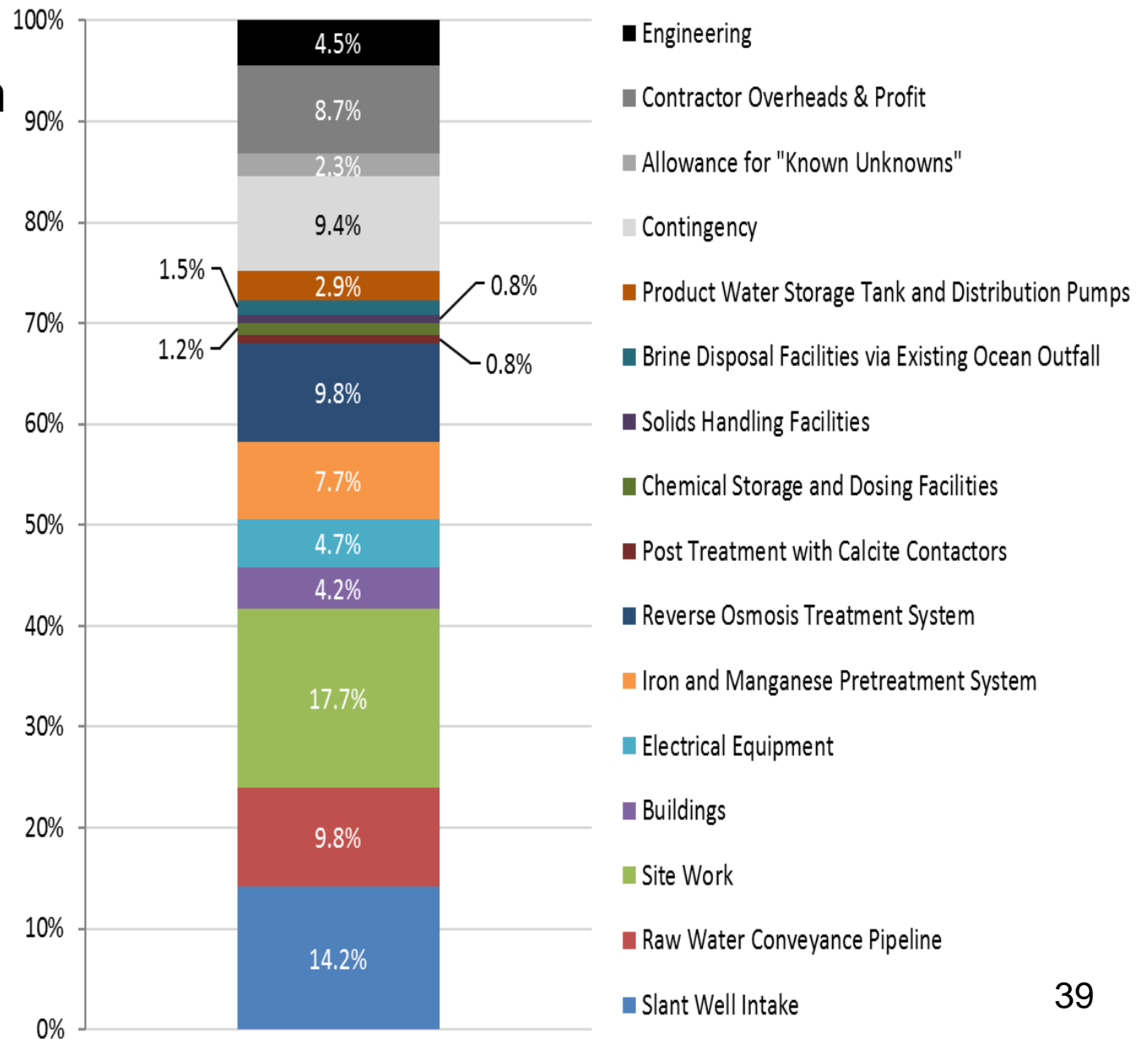
Different Procurement Models

Comparison of Unit Costs (\$/Acre-Foot)



# Capital Cost Breakdown

Project CAPEX breakdown



# Key Areas Which Vary Capital Cost

Geophysics for offshore work and Geotechnical for plant site.

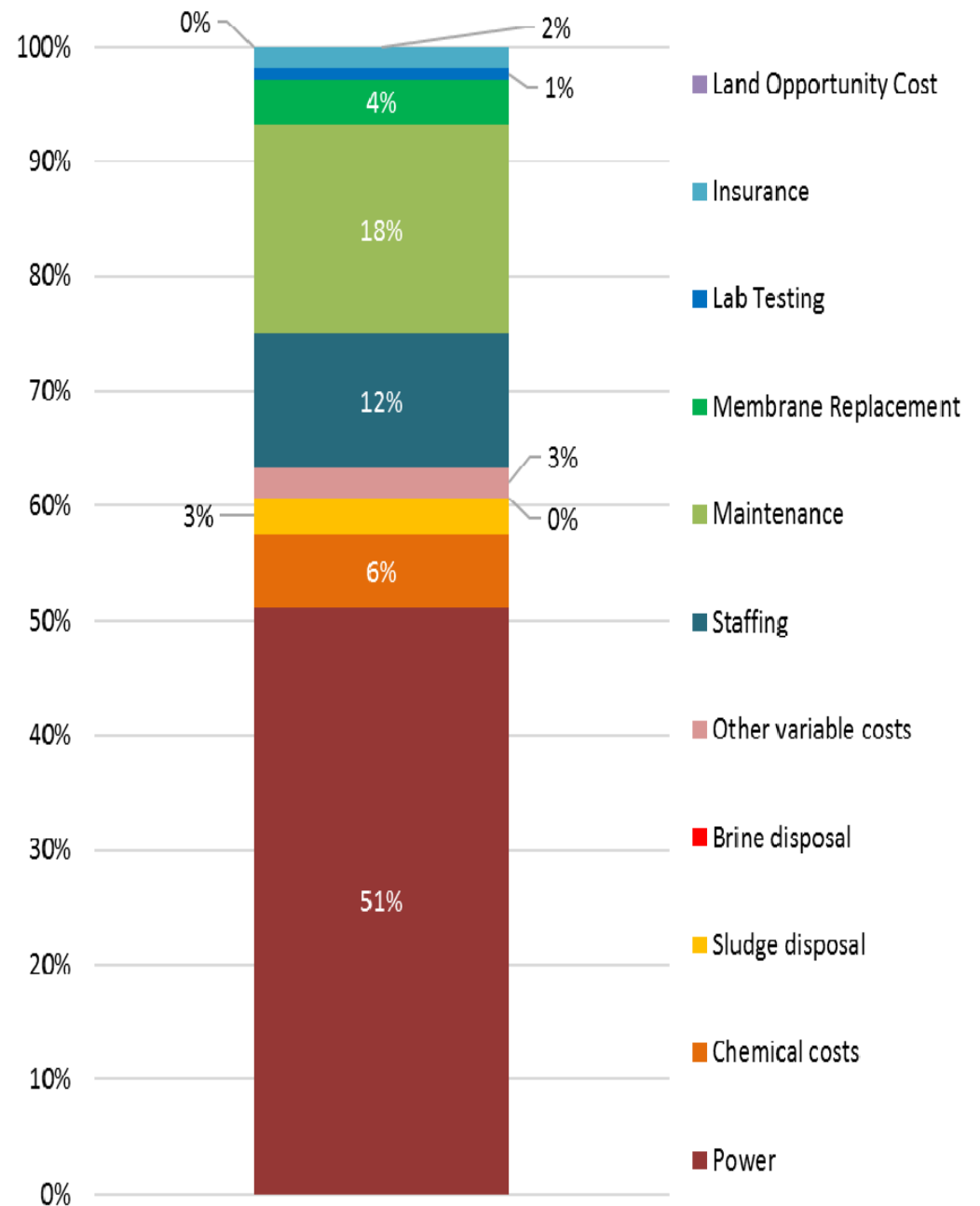
Pre-treatment approach.

Risk transfer and project delivery approach.



# Operating Costs Breakdown

## OPEX Breakdown



## Key Areas Which Vary 'Operating' Cost

- Power cost (this will be examined in more detail later in this presentation)
- Sludge disposal (which is related to pre-treatment)
- Amount of use of plant. (If plant used at full capacity all the time, then fixed costs per AF are lowest possible).

# Financing Cost Illustration

## 5 MGD Project

	Description	Annual repayment for One Example	30 year NPC (\$ Million)	Comment
Option 1	Standard loan, fixed interest rate at 2%	\$4.5 million	\$75	Lowest Cost Option
Option 2	PPP - Combination of debt and equity loan, fixed interest rate for both. 30% Equity at 10%, and Remainder at 4%	\$6.3 million	\$100	Equity stake by project partner in PPP can help align incentives for efficient project delivery
Option 3	PPP - "Back-ended" finance approach with 10 year loan repayment free period at beginning of project	\$3.1 million initially, then \$10 million	\$115	Can distribute capital repayments favorably however additional cost over life of project



# Variation in Costs with Different Decisions

- Capital cost per acre-foot varies with project size and risk decisions.
- Operating costs can vary particularly with power costs.
- Financing costs can change based on approach.

Private sector delivery could alter the mix, for example with lower capital costs due to risk acceptance, but higher financing costs.

# Impact of Choices

- The following handouts illustrate the effect on the project cost of altering different aspects of the project.
- Note that with three areas (capital, operating and financing) and many variables in each, the number of combinations is high.

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# Economic Analysis Handouts



## What Conclusions Can We Draw?

- Larger project saves in unit cost.
- With current SRF loan rates: harder to justify private financing.
- Power cost is a significant factor.
- Cost difference between base case and MET price become neutral in NPV terms over time.

# Project Delivery

- Project size for 5 MGD does not seem very attractive to PPP market.
- For 15 MGD, moving to size where PPP might be more attractive to market.
- Financial analysis suggests PPP market will have to find funds at SRF loan rates (say 2%), and also find sufficient savings in project execution to make up for need to get return on equity.



## A Possible Approach

- Technical Risk is much lower once 5 MGD is proven.
- Execute 5 MGD now as SRF funded DBO with shorter O period.
- Determine if other agencies are interested in 15 MGD as 5 MGD is being built and operated.
- Subsequent 15 MGD project may yield additional cost savings.
- Decision as to project financing approach can wait until CEQA completion.

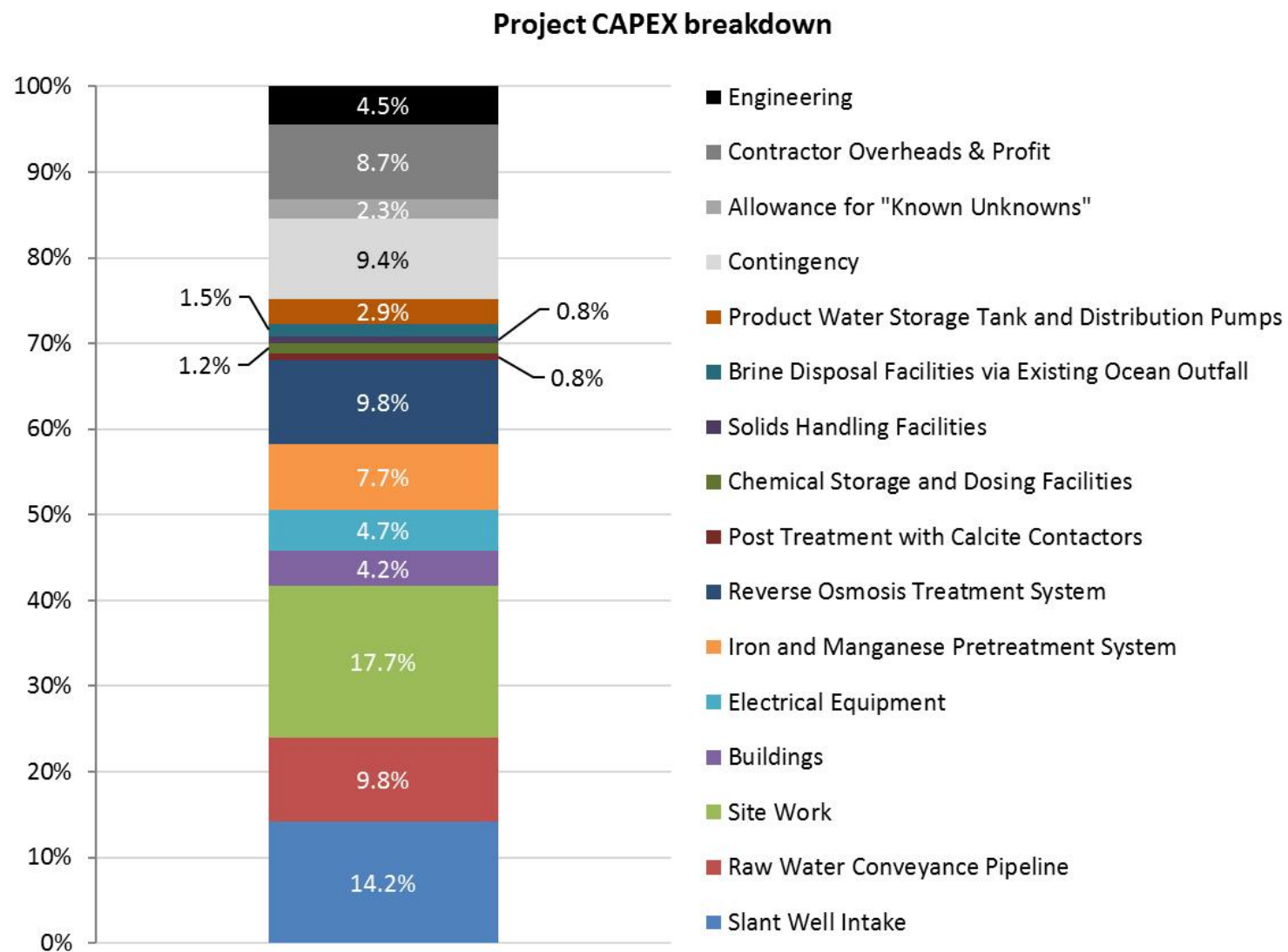


# Doheny Desalination Project Preliminary Economics

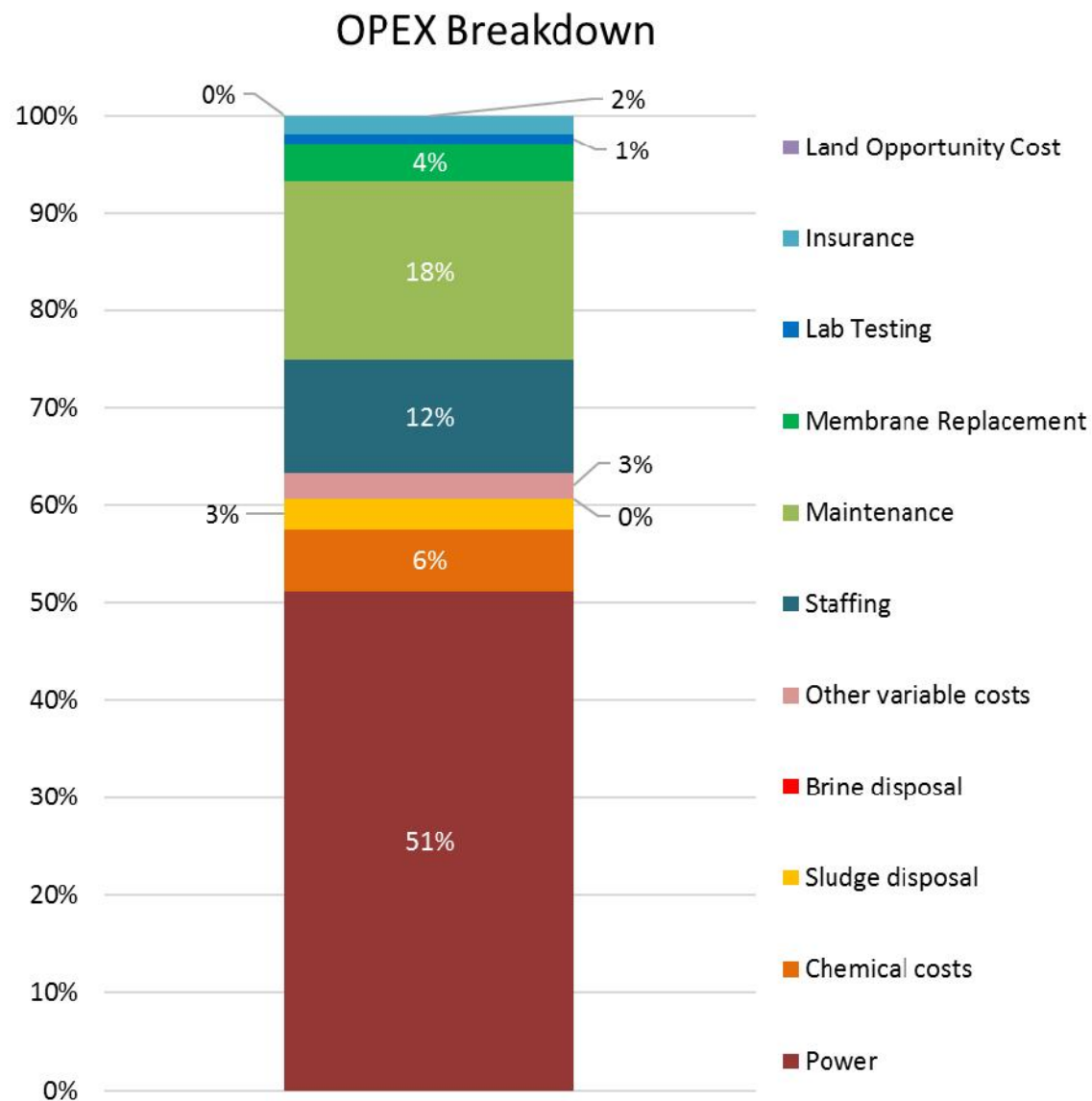
# Outline

- Capital Cost
- Operating Cost
- Costs per Acre-foot
- Sensitivity Analysis

# Capital Cost Breakdown



# Operating Costs Breakdown



# Costs per Acre-foot

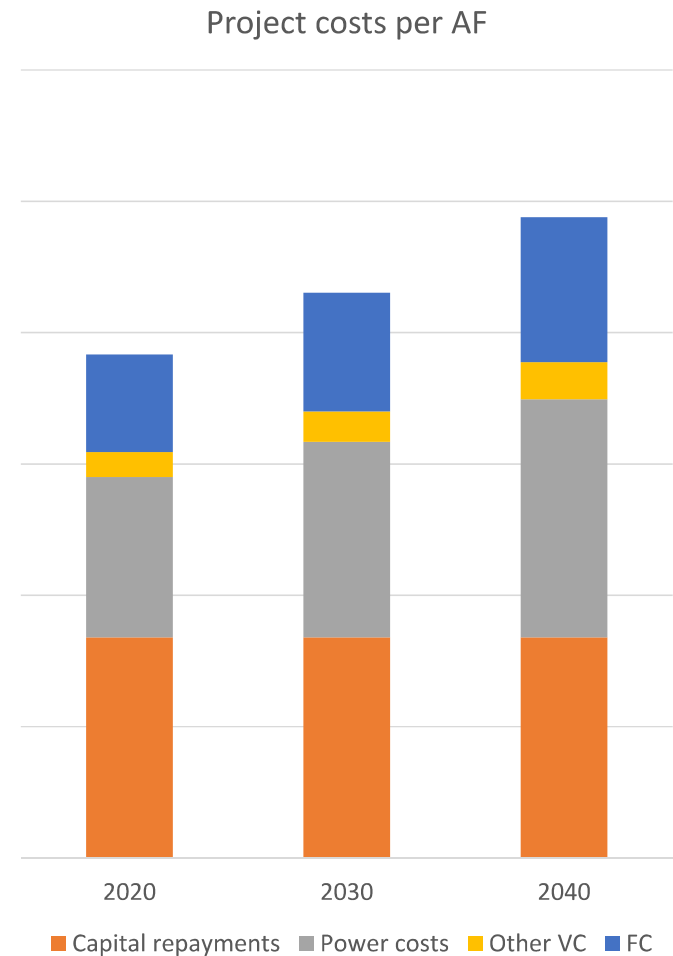
Capital cost becomes an annual repayment based on financing approach.

Power cost is based on power use and cost per kW hr.

Fixed Costs (like staffing and maintenance) (FC)

Variable Costs (like sludge disposal and chemical costs) (VC)

These costs are then divided by the annual production in acre-feet to give the cost per AF.



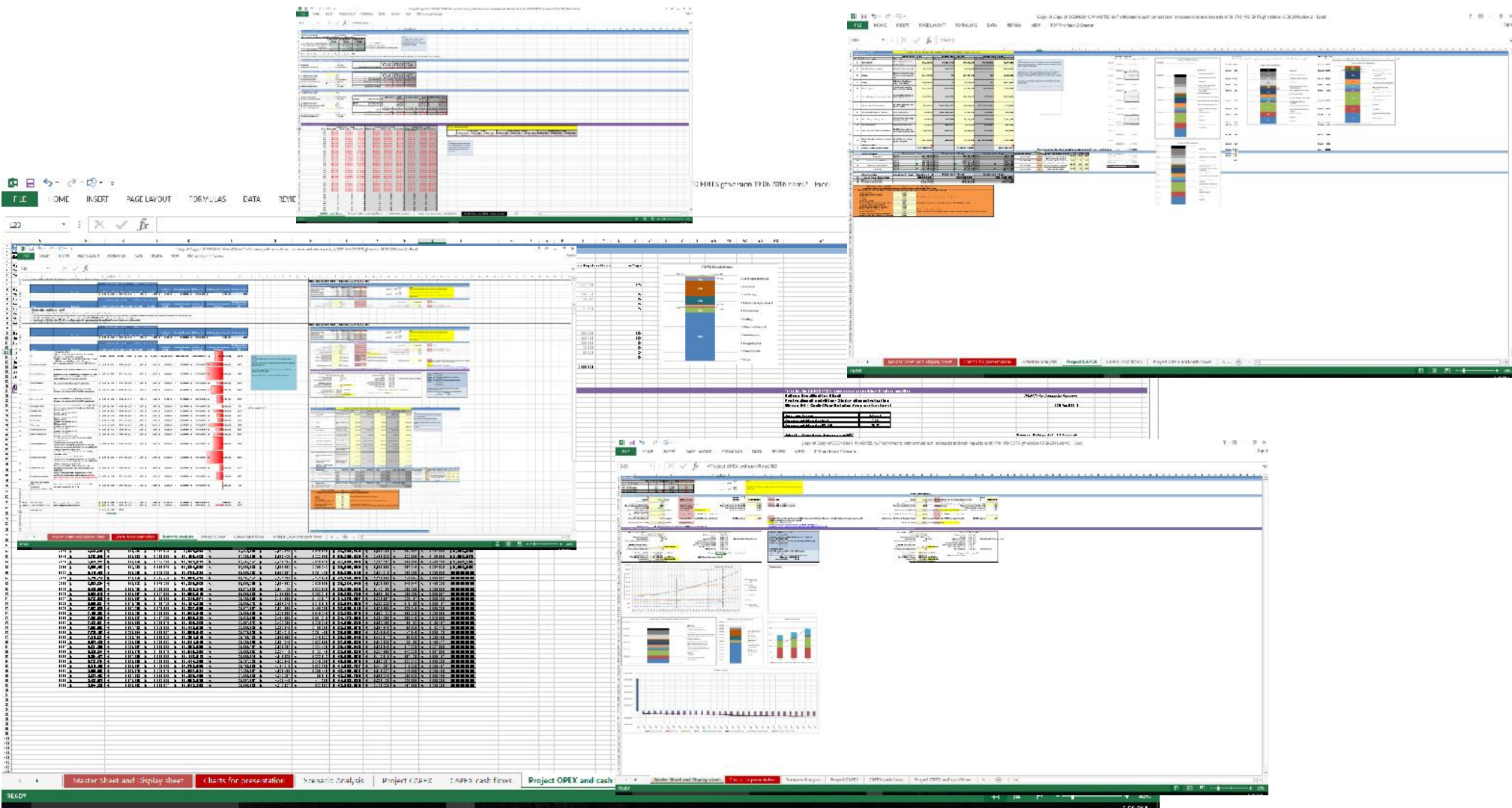
# All of these Vary over Time and For different Assumptions

- Capital cost varies with different assumptions, including the size of the project.
- Power cost varies with the tariff.
- Financing cost varies with funding approach.
- Operating costs vary with inflation.

# Spreadsheet Model

- A spreadsheet model has been built which incorporates all these variables.
- It can be 'run' to give costs per AF for different scenarios.
- Here it is:





# Cost per AF over Time

- The following slides show how the cost of water is built up.
- They also show the MWD costs for comparison.

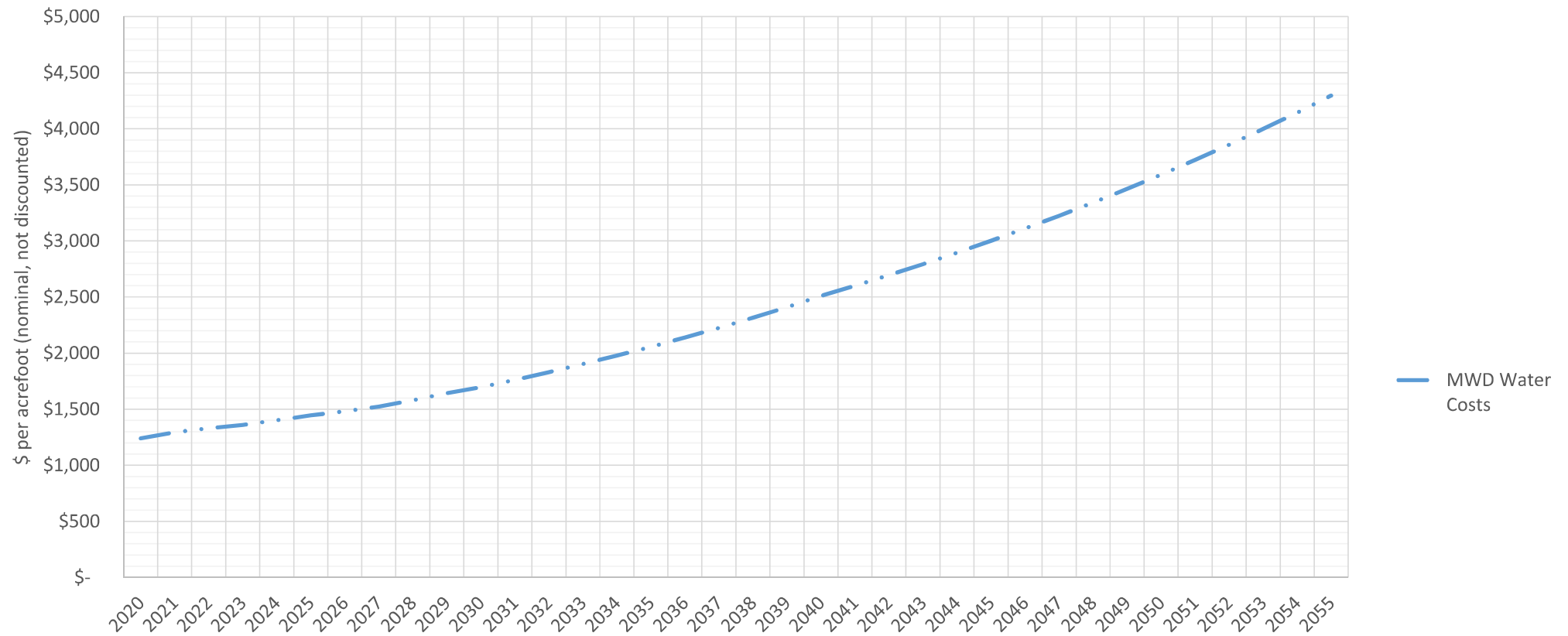
# Case One Assumptions

Many different cases can be analyzed. The following slides illustrate Case One.

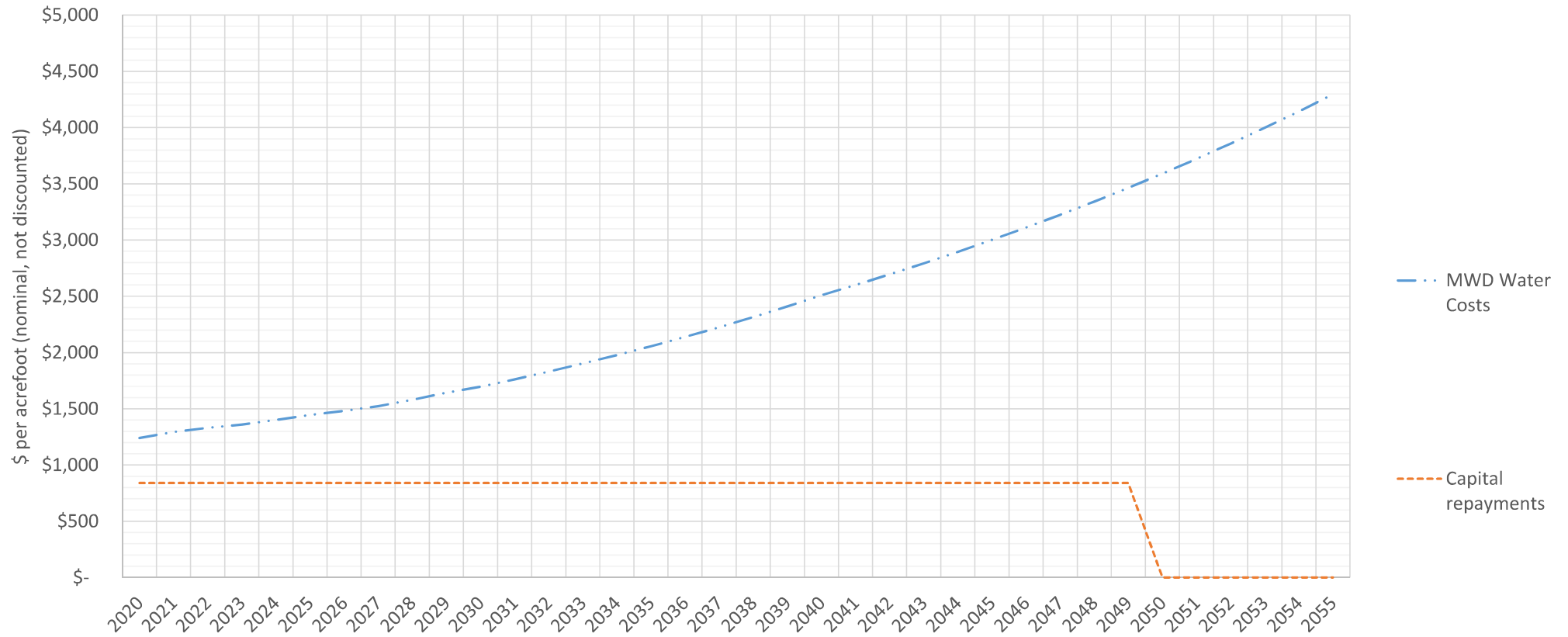
- Plant size = Project One (5 MGD with Infrastructure sized to 15 MGD).
- Funding = 2% p.a. fixed over 30 years.
- Power = 12 c/kWhr then escalating at 2%.
- 5 MGD at 95% Load Factor = 5300 AF/yr

MWD Costs: Uses Published Rates for 10 years, then Escalated at 4% per annum.

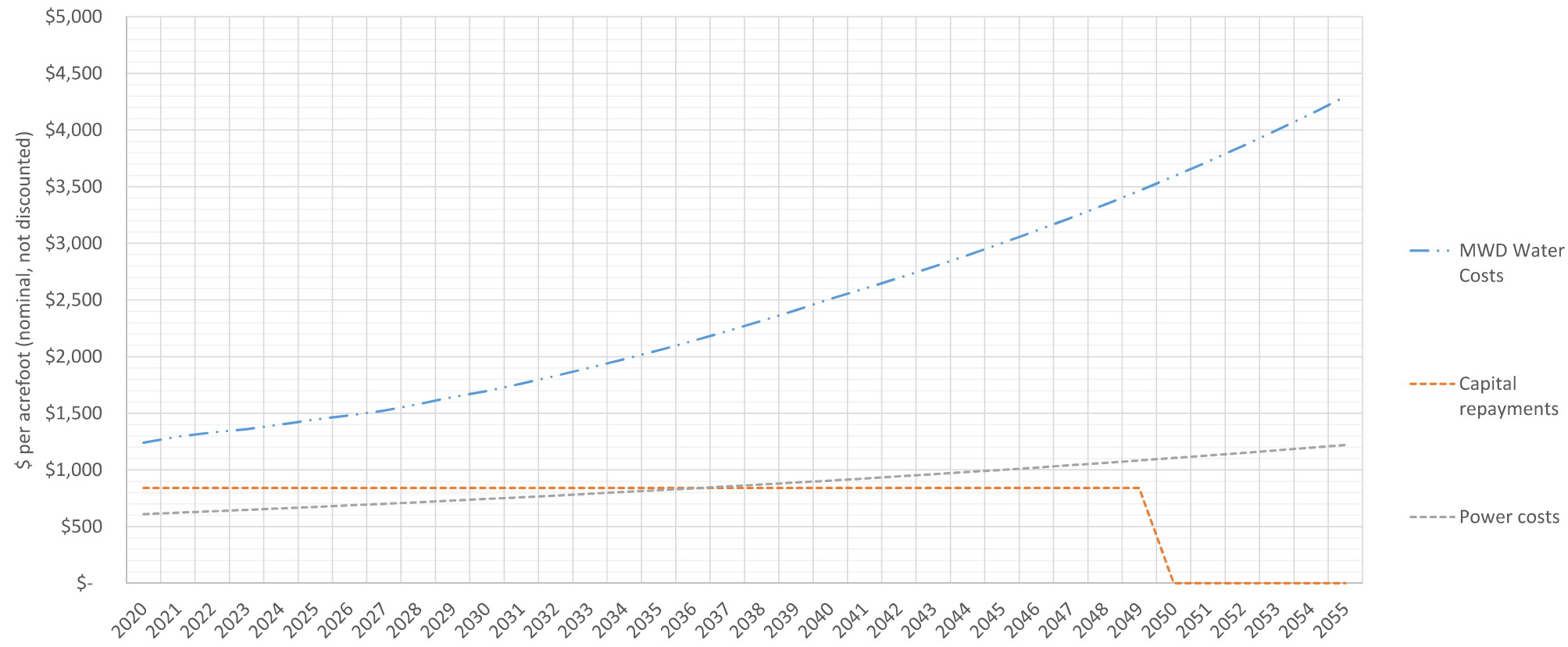
4% Chosen to match recent MWDOC reliability study.



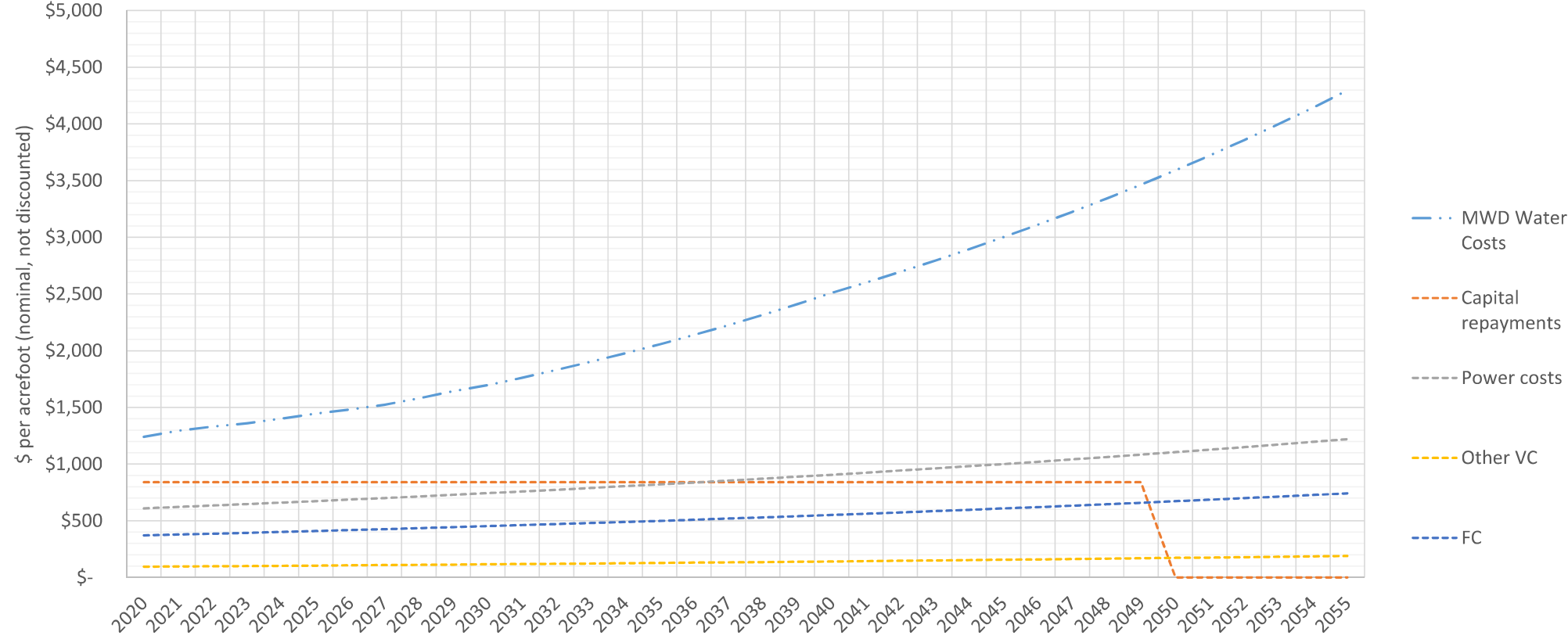
This slide adds the capital repayments for the Case One Plant at 2% per annum fixed for 30 years, divided by the AF per year production.



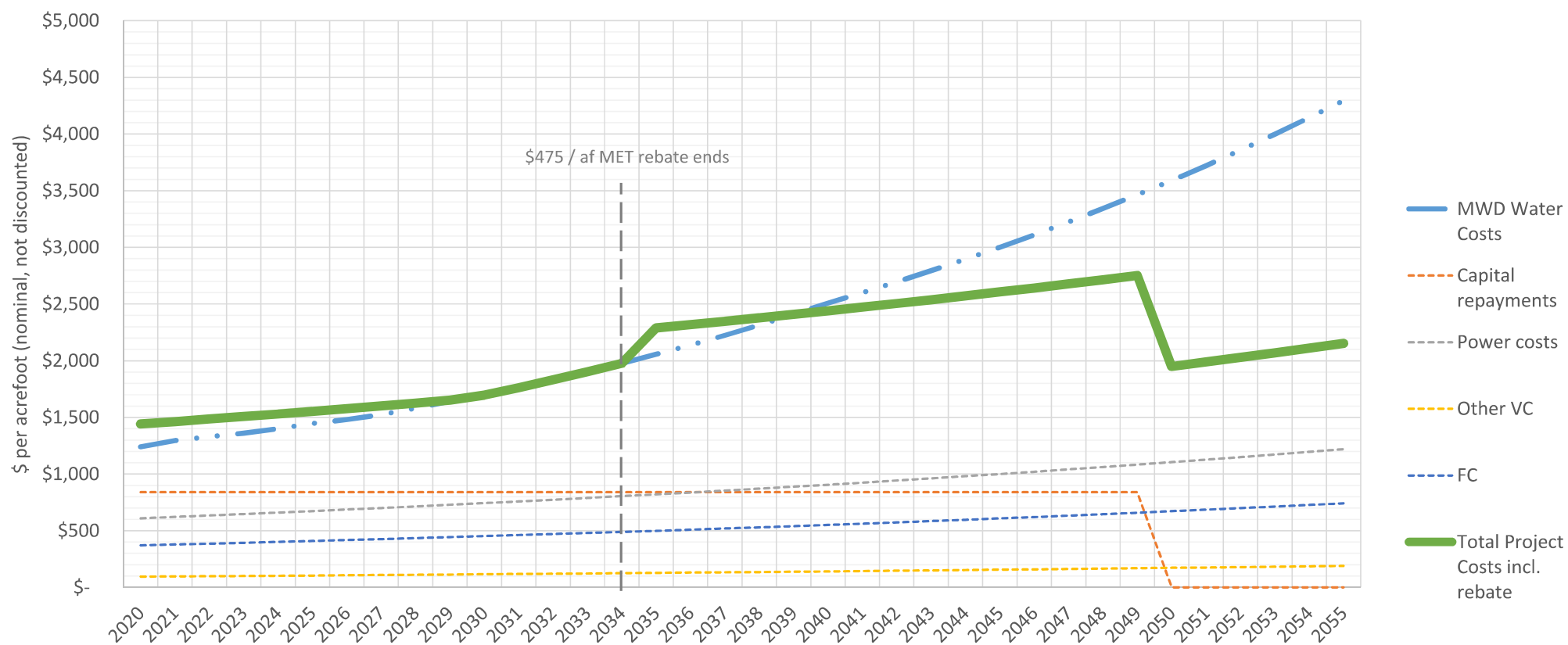
This slide adds the power costs at an initial rate of 12 c/kWhr, escalating at 2% p.a.



This slide adds the remaining fixed and variable operating costs, escalating at 2% p.a.



This shows the cost per AF for Project One (noting the assumptions prior) with the LRP rebate included. Note that as the Project Cost approaches the MET cost, the rebate reduces.





# Graphs Showing Different Curves for Different Assumptions.

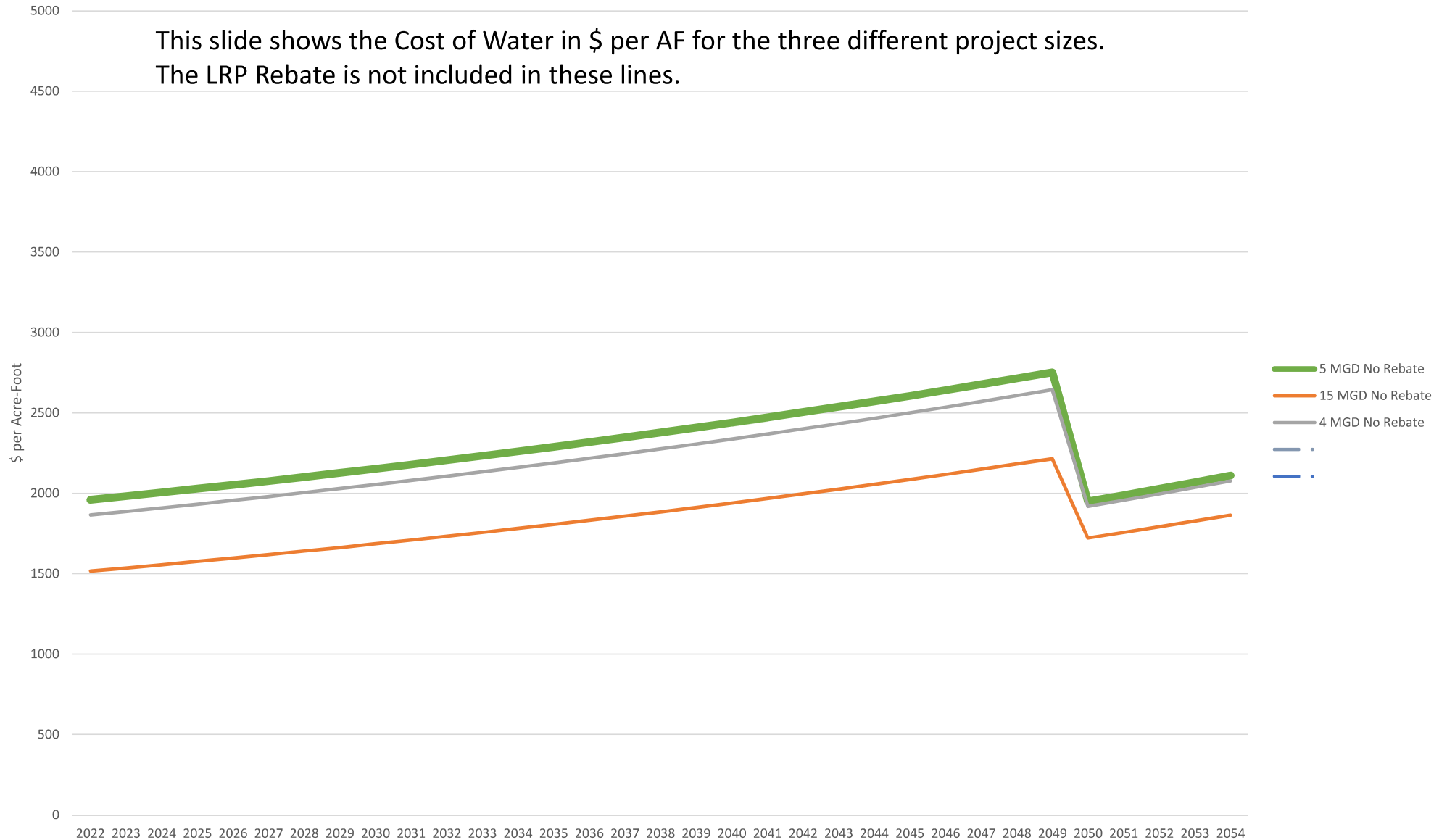
The 'base case' in the following graphs is Project One and Case One:

- 5 MGD
- 2% Fixed Loan
- 12 c per kWhr power escalating at 2%.

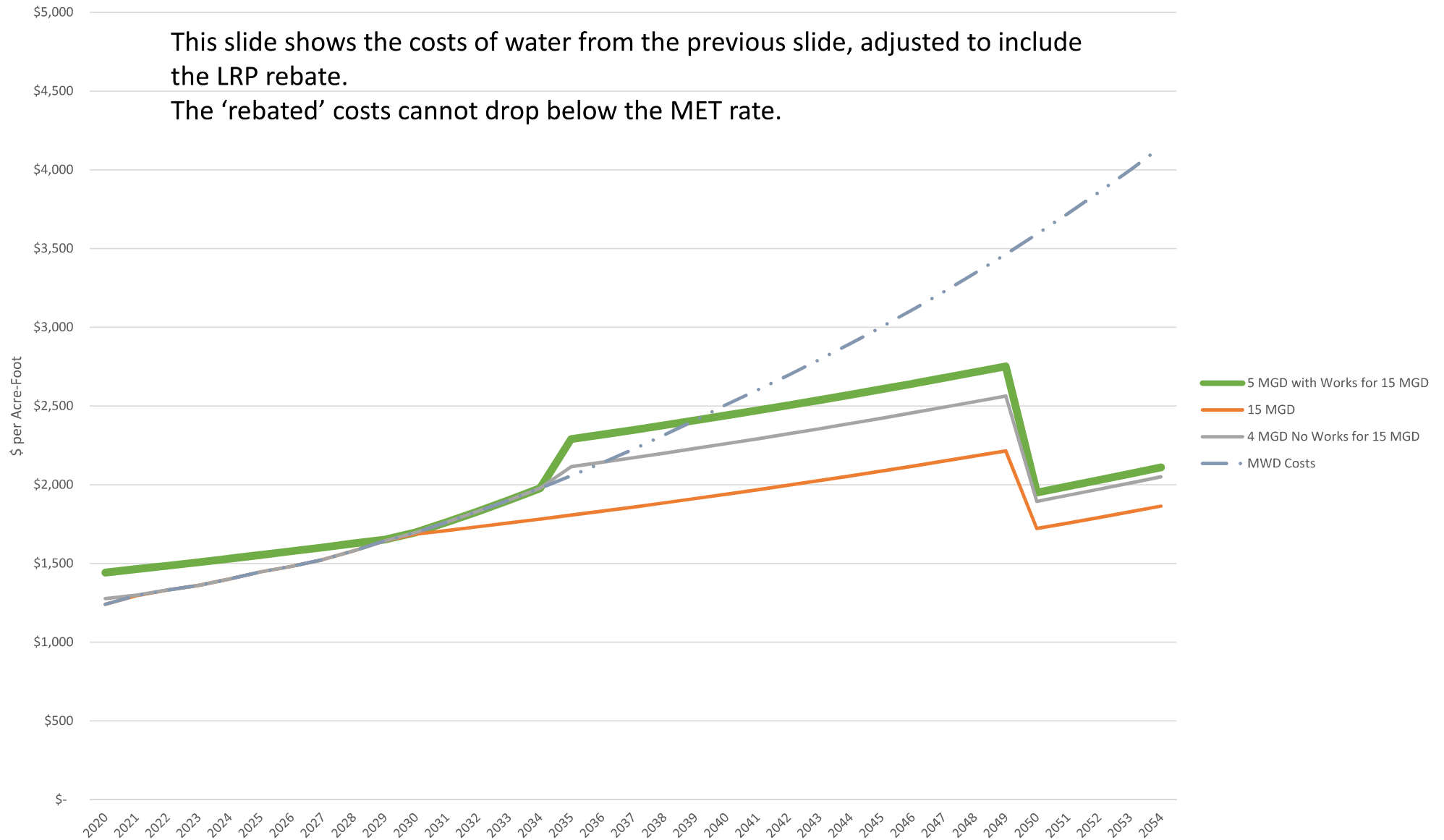
# Different Projects and Volumes

Project	Daily Capacity	Load Factor	AF/yr used in Model
One	5 MGD	95 %	5,300
Two	15 MGD	95%	16,000
Three	4 to 5 MGD	90%	5,000

This slide shows the Cost of Water in \$ per AF for the three different project sizes.  
The LRP Rebate is not included in these lines.

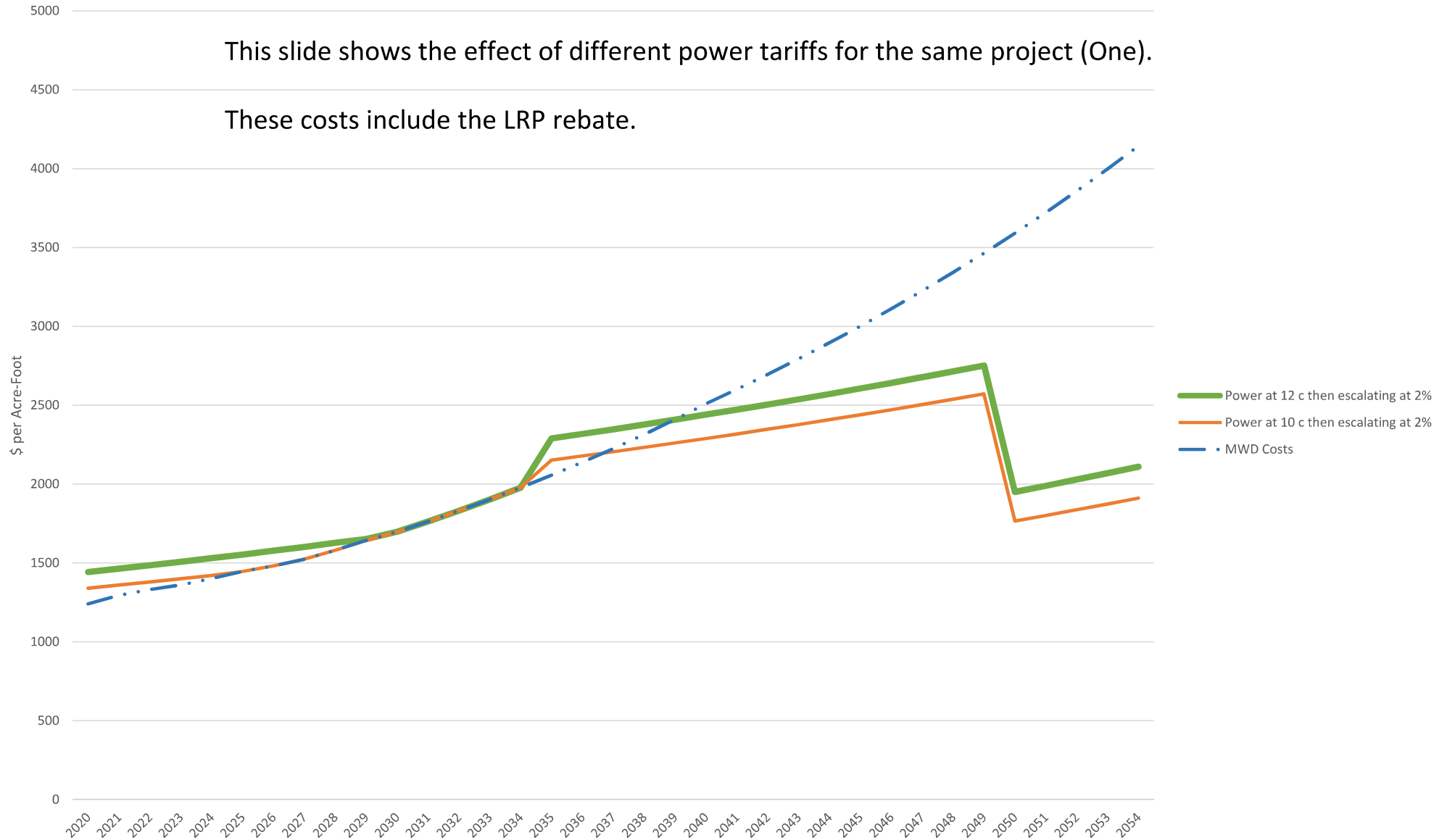


This slide shows the costs of water from the previous slide, adjusted to include the LRP rebate.  
The 'rebated' costs cannot drop below the MET rate.



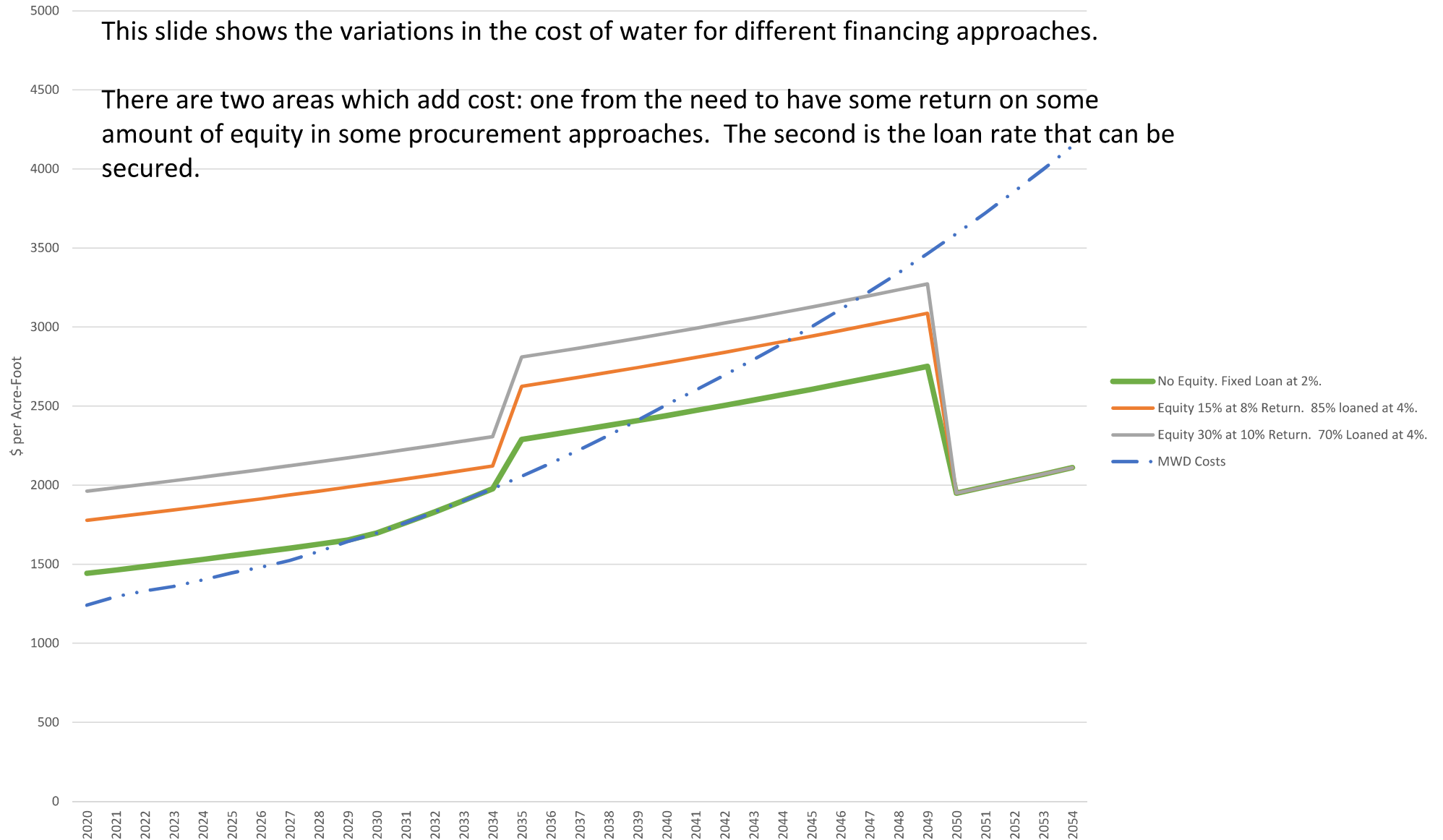
This slide shows the effect of different power tariffs for the same project (One).

These costs include the LRP rebate.

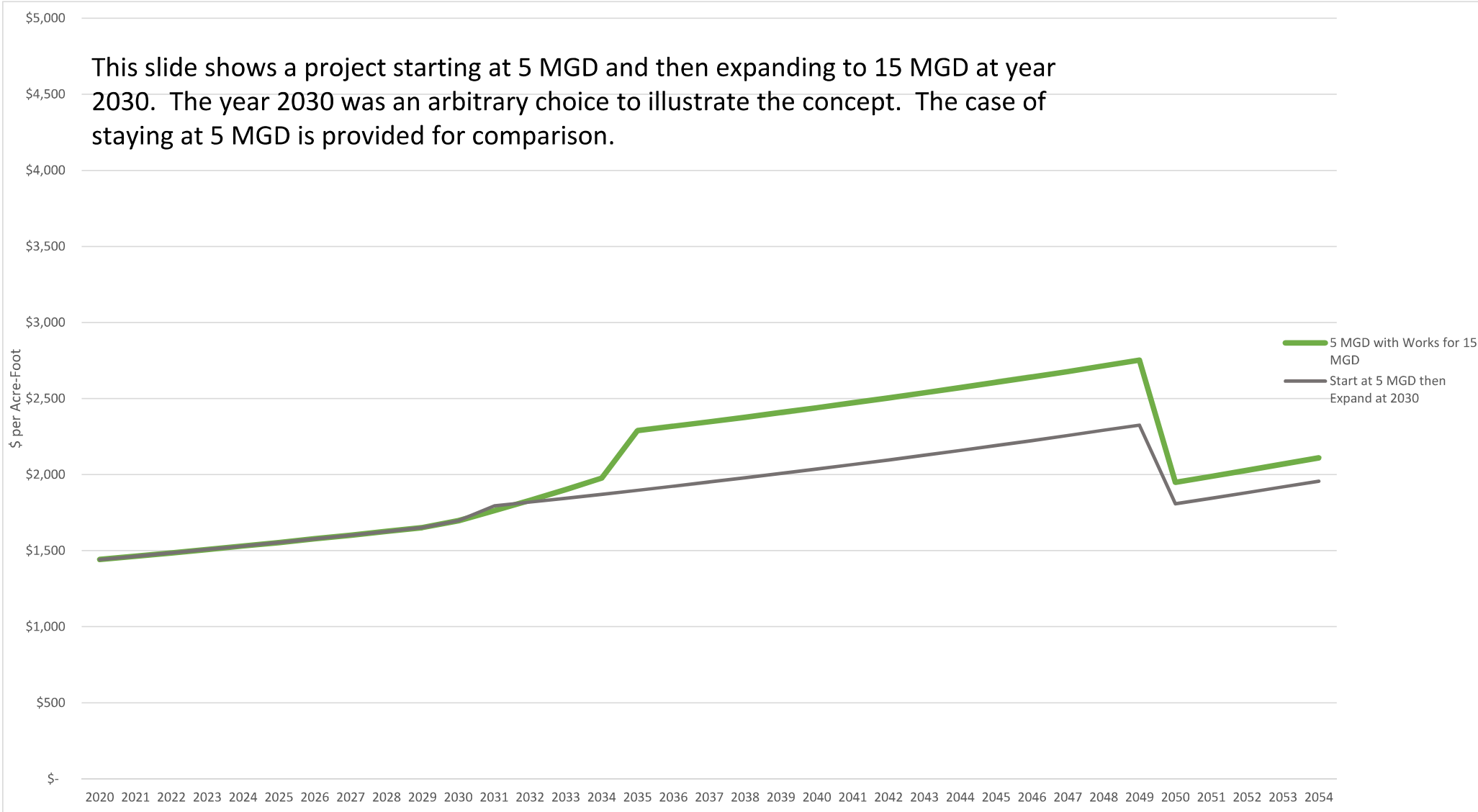


This slide shows the variations in the cost of water for different financing approaches.

There are two areas which add cost: one from the need to have some return on some amount of equity in some procurement approaches. The second is the loan rate that can be secured.

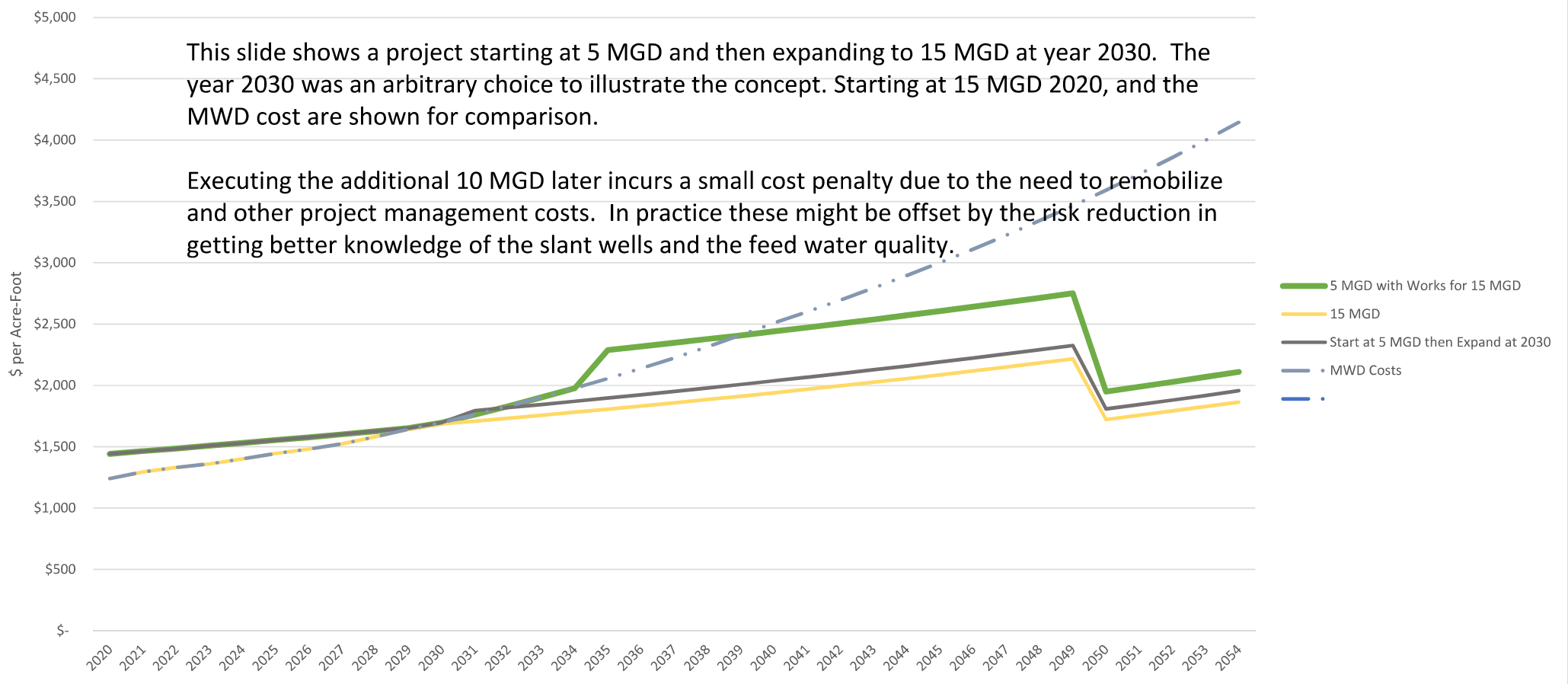


This slide shows a project starting at 5 MGD and then expanding to 15 MGD at year 2030. The year 2030 was an arbitrary choice to illustrate the concept. The case of staying at 5 MGD is provided for comparison.



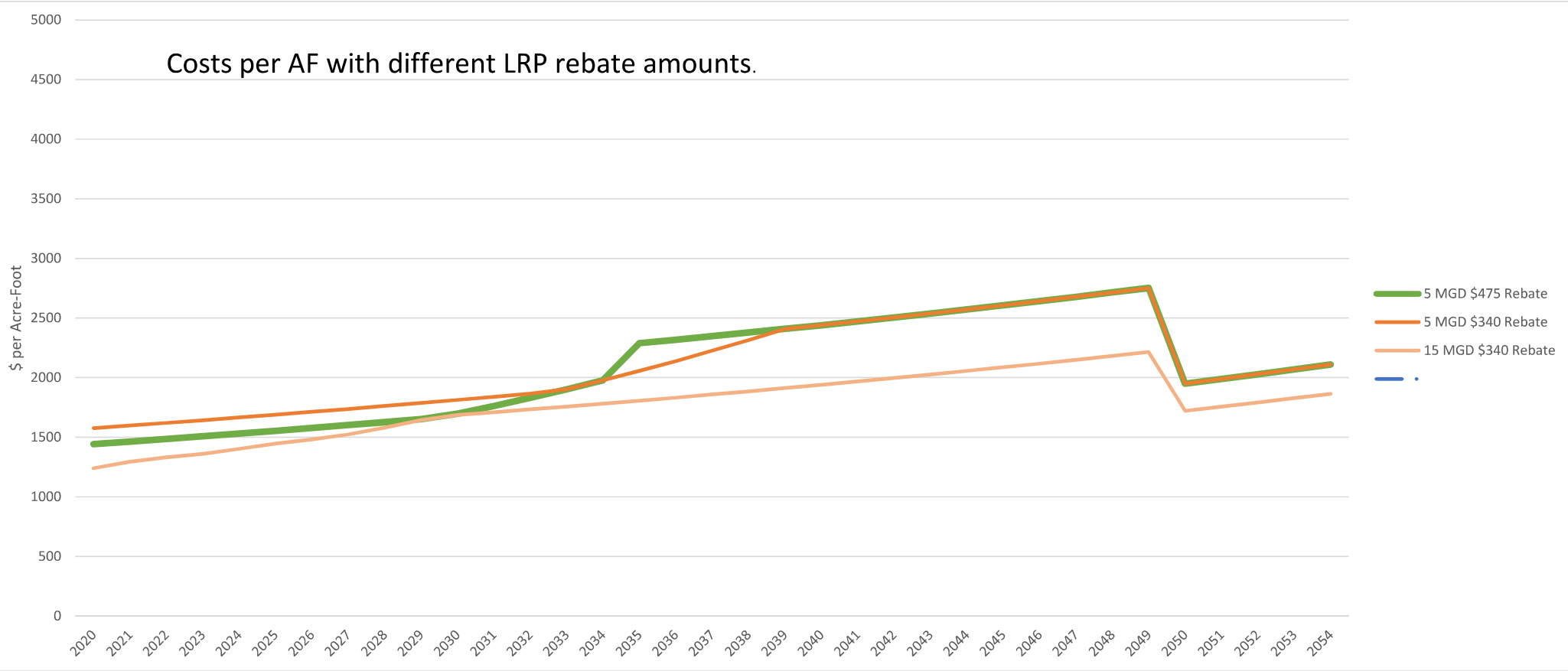
This slide shows a project starting at 5 MGD and then expanding to 15 MGD at year 2030. The year 2030 was an arbitrary choice to illustrate the concept. Starting at 15 MGD 2020, and the MWD cost are shown for comparison.

Executing the additional 10 MGD later incurs a small cost penalty due to the need to remobilize and other project management costs. In practice these might be offset by the risk reduction in getting better knowledge of the slant wells and the feed water quality.





Costs per AF with different LRP rebate amounts.



# What Conclusions Can We Draw?

- Larger project has a lower cost per AF, due to economies of scale in infrastructure cost.
- The ability to access SRF loans creates a financing cost which the private financing might struggle to match.
- Power cost is a significant factor, so uncertainties here need resolution.

# Project Delivery?

- Project size for 5 MGD is less attractive to PPP market.
- For 15 MGD the project is at the lower end of size where PPP might be attractive to market.
- Economic analysis suggests PPP market will have to find funds at SRF loan rates (say 2%), and also find sufficient savings in project execution to make up for the need to get return on equity. This may be challenging.

## A Possible Approach?

- Execute 5 MGD now as SRF funded DBO with shorter O period.
- Determine if other agencies interested in 15 MGD as 5 MGD is being built and operated.
- At later point, technical risk is lower once 5 MGD proven, and 5 MGD project could form base for 15 MGD project. So 15 MGD project could be a lower price than if started today.
- Decision as to procurement approach for the later stage could wait and could involve other agencies.

# In Conclusion

- We now have an understanding of the likely costs and the economics.
- We have a model to let us explore different options and assumptions.
- We seek your input on which options and assumptions should be tested and incorporated in a final report.



**INFORMATION ITEM**

July 5, 2016

**TO: Planning & Operations Committee**  
(Directors Dick, Hinman, Finnegan)

**FROM: Robert Hunter, General Manager**

Staff Contact: Karl Seckel

**SUBJECT: MWDOC Letter to the Regional Board on the Poseidon Project**

**STAFF RECOMMENDATION**

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Staff recommends the Planning & Operations Committee receives and files the report.

**COMMITTEE RECOMMENDATION**

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Committee recommends (To be determined at Committee Meeting)

**OVERVIEW**

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On May 6, 2015 the State Water Resources Control Board ("State Water Board") adopted final amendments to the California Water Quality Control Plan for Ocean Waters addressing desalination intakes and brine discharges (the "Desalination Amendment"). The Desalination Amendment establishes regulations for the intake and discharge from seawater desalination facilities. The Regional Water Boards will implement the Desalination Amendment through the NPDES permitting process. The Desalination Amendment provides direction to the state's nine regional water boards on the application of California Water Code Section 13142.5(b), which provides: *"For each new or expanded coastal power plant or other industrial installation using seawater for cooling, heating, or industrial processing,*

<b>Budgeted (Y/N):</b> n/a	Budgeted amount:	Core __	Choice __
<b>Action item amount:</b>		Line item:	
<b>Fiscal Impact (explain if unbudgeted):</b>			

*the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.”*

In 2012, the Santa Ana Regional Water Quality Control Board (“SARWQCB”) approved Order No. R8-2012-0007, NPDES No. CA8000403 for Poseidon Water’s Huntington Beach Desalination Project. NPDES permits are 5-year operating permits. Poseidon’s NPDES permit will need to be renewed in 2017 and at the time Poseidon will need to demonstrate compliance with the State Water Board’s Desalination Amendment.

Poseidon has submitted its application to the SARWQCB for a new NPDES permit and determination that the Huntington Beach Project complies with the Desalination Amendment. It is anticipated that Poseidon will be before the California Coastal Commission in September of 2016 for consideration of the project’s Coastal Development Permit. The Coastal Commission permit and the SRWQCB permit differ in that the Coastal Development Permit is a construction permit whereas the NPDES permit is an operating permit.

Section M.2.b.(2) of the Desalination Amendment states: *“Consider whether the identified need for desalinated water is consistent with an applicable adopted urban water management plan prepared in accordance with Water Code section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan.”*

In order to demonstrate compliance with this provision of the Desalination Amendment, Poseidon has provided the Regional Board with a copy of MET’s Integrated Resource Plan 2015 Update, MWDOC’s UWMP 2015 Update, OCWD’s Groundwater Management Plan 2015 Update, OCWD’s Long-Term facilities Plan 2014 Update and the 2015 Water Reliability Agreement Term Sheet between Poseidon and OCWD.

MWDOC has received a request from Poseidon to provide a letter to the SARWQCB explaining the identification of the Poseidon Huntington Beach Project in the MWDOC UWMP 2015 Update vis-a-vis Chapter III.M.2b.(2) of the Desalination Amendment.

Staff has prepared a draft letter, attached, and plans on sending this to the SARWQCB this month.

The draft letter is attached.

June XX, 2016

**Via e-mail:**

[Kurt.Berchtold@waterboards.ca.gov](mailto:Kurt.Berchtold@waterboards.ca.gov)

**DRAFT**

Mr. Kurt V. Berchtold  
Executive Officer  
Santa Ana Regional Water Quality Control Board  
3737 Main Street, Suite 500  
Riverside, CA 92501

Dear Mr. Berchtold:

I am writing regarding the Santa Ana Regional Water Quality Control Board's ("Regional Board") consideration of the proposed Huntington Beach Desalination Project.

The Municipal Water District of Orange County ("MWDOC") is the County's wholesale water supplier and resource planning agency (MWDOC covers all of Orange County with the exception of Anaheim, Fullerton and Santa Ana, serving imported water to about 2.4 million residents). Our efforts focus on sound planning and appropriate investments in water supply development, water use efficiency, public information, legislative advocacy, water education, and emergency preparedness. We are committed to providing a reliable supply of high quality water for Orange County. Working closely with the Metropolitan Water District of Southern California (MET) and our 28 Member Agencies, MWDOC looks for opportunities to improve Orange County's water resources and reliability.

On May 6, 2015, the State Water Resources Control Board ("State Water Board") adopted Amendments to the Water Quality Control Plan for Ocean Waters of California Addressing Desalination Facility Intakes, Brine Discharges, and Incorporating Other Non-substantive Changes (the "Desalination Amendment"). The Desalination Amendment took effect as new regulation on January 28, 2016.

Chapter III.M.2b.(2) of the Desalination Amendment states, "*Consider whether the identified need for desalinated water is consistent with an applicable adopted urban water management plan prepared in accordance with Water Code section 10631, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan.*"

In May 2016, MWDOC adopted its 2015 Urban Water Management Plan ("UWMP") Update. The UWMP Update finds that MWDOC's service area total direct and indirect demands in FY 2014-2015 was 499,120 AF, which was met by approximately 225,000 acre feet (45%) of imported water. Under normal conditions, total direct and indirect water demands are projected



to increase to 515,425 AF by the year 2040 with Orange County still relying on imported water for over 200,000 AF per year without the development of new supplies from the ocean (this assumes large investments in water use efficiency continue and that OCWD's Groundwater Replenishment System is expanded to 130,000 acre-feet per year).

UWMP Section 7.3 "*Planned Water Supply Projects and Programs*" identifies the proposed 50 MGD Huntington Beach Desalination Project as a project that could meet future projected demands as well as reduce the County's demand on imported water. The Huntington Beach Desalination Project was also included as a potential supply in our recent Orange County Water Reliability Study (just now circulating the draft report). The purpose of the Reliability Study was to evaluate the reliability of imported supplies in the absence of new water investments in Southern California and then test the improvements made by NEW supply development. The Reliability Study found that Orange County would have shortages in 8 of 10 years without NEW investments in Southern California and in Orange County. Water supply investments made by MET, the MET Member Agencies or investments within Orange County could lead to full reliability over time.

In this regard, the proposed 50 MGD Huntington Beach Desalination Project appears to comply with Chapter III.M.2b.(2) of the Desalination Amendment.

If you have any questions about MWDOC's UWMP 2015 Update or our recently completed Reliability Study, please feel free to contact me.

Sincerely,

Robert J. Hunter, General Manager  
Municipal Water District of Orange County

cc: MWDOC Board  
Scott Maloni, Poseidon Water

# Status of Ongoing MWD OC Reliability and Engineering and Planning Projects

June 28, 2016

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
<b>Baker Treatment Plant or Expansion of Baker Water Treatment Plant</b>	IRWD, MNWD, SMWD, ETWD Trabuco CWD		On line date is Oct 2016	<p>Two meters cover the low flow (OC-33A) and the higher flow range at service connection OC-33. The NEW larger capacity OC-33 Mag Meter serving the Baker Pipeline and the Baker Treatment Plant was installed the week of June 6. Demands at the time the installation was complete were low, so the OC-33A meter (the old low flow meter) was used for metering flows at that time. In addition, MWD OC was still awaiting the low flow waiver and the notice of activation from MET regarding OC-33 to put the larger meter into service.</p> <p>Unfortunately, when the OC-33A meter was put back in service the meter totalizer failed resulting in an inability to measure the volume of deliveries. MET contacted the meter manufacturer to obtain the repair parts and had scheduled a shutdown to remove, repair and replace the meter.</p> <p>At about the same time, MET provided both the low flow waiver at OC-33 and provided the letter of activation for service connection OC-33. A field meeting was scheduled to activate the new meter and place it in operation and to pull the OC-33A meter to get it repaired. During activation of the OC-33 meter, it was discovered that the meter did not come with a reporting feature. The reporting feature provides diagnostic information about the meter and can only be added by factory technicians based out of Pennsylvania. It may take</p>

<b>Description</b>	<b>Lead Agency</b>	<b>Status % Complete</b>	<b>Scheduled Completion Date</b>	<b>Comments</b>
				several weeks to get this feature activated. In the interim, the meter was put into service and appeared to be operating correctly.
<b>Doheny Desalination Project</b>	South Coast Water District, Laguna Beach CWD			<p>South Coast Water District held a Project Delivery and Cost Update Workshop on the Doheny Project on June 22. A full report is included in the P&amp;O Committee.</p> <p>South Coast is continuing to move the project forward and to look for potential partners and grant funding.</p> <p>MWDOC is working on the decommissioning and removal of the test facilities at Doheny State Park. An evaluation of the Pilot Plant Mobile Test facility is being completed on June 28. This evaluation will serve as the basis for establishing a cost basis and a lease rate to lease the facility to SDCWA for one year.</p> <p>MWDOC is awaiting NWRI to schedule the Science Advisory Panel to review both the SJBA and the South Coast Water District Foundational Action Program Studies.</p>
<b>Poseidon Resources Ocean Desalination Project in Huntington Beach</b>				The OCWD Board and staff will continue their discussions regarding integration of the Poseidon Project into the local water supplies from the OCWD Groundwater basin at their upcoming meeting on July 6.
<b>Orange County</b>				MWDOC and its consultant CDM-Smith are working on

<b>Description</b>	<b>Lead Agency</b>	<b>Status % Complete</b>	<b>Scheduled Completion Date</b>	<b>Comments</b>
<b>Reliability Study</b>				completion of the written documents covering the work over the past year and a half. Most recently, the first DRAFT of Technical Memorandum #4 was issued to circulate to get input and comments on prior to completing the final report.
<b>Other Meetings/Work</b>				
				Karl Seckel, Keith Lyon and Kevin Hostert participated in a meeting with Newport Beach and Laguna Beach CWD to discuss operational issues with conveying groundwater from NB to LB through the Coast Supply Line to help LBCWD perfect their water rights recently re-established in the OCWD basin. A second meeting is being scheduled to involve MET as the operations may require a shutdown of a segment of a MET pipeline which could lead to deterioration of water quality in that section of pipeline. Strategies to eliminate this constraint will be discussed.
				Karl Seckel, Rob Hunter and Harvey De La Torre met with our consultant Black & Veatch to open discussions regarding introduction and conveyance of either groundwater or Poseidon water in the EOCF#2. This was an introductory meeting to brief B&V on the historical issues and seek their input on options to consider.
				Karl Seckel participated with the Board of CalDesal on monthly conference calls with the Executive Director Paul Kelley and other members of the Board. A strategic planning workshop is

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
				being planned for July 7 to outline future CalDesal activities including promoting salinity management for management of groundwater basins to grow the extent of the organization.
				Karl Seckel, Rob Hunter and Director Sat Tamaribuchi took the opportunity to hold a discussion with Curt Schmutte on the California Water Fix Eco Restore issues while Curt was in town to provide a presentation to WACO on the Bay-Delta issues.
				Karl Seckel presented the SOC Results from the OC Water Reliability Study to the San Juan Utilities Commission on June 7 and to the South Coast Board on June 9. Director Hinman attended the June 9 meeting, but was meeting with Supervisor Bartlett on June 7 and could not attend the San Juan meeting.
				Karl Seckel presented the Proclamation of Water Conservation to the City of Huntington Beach Council (Director Finnegan had to bow out of the meeting due to an illness).

**Status of Ongoing WEROC Projects  
June 2016**

<b>Description</b>	<b>Comments</b>
<p><b>Coordination with Member Agencies</b></p>	<p>Orange County Water Procurement and Distribution Planning Update – Efforts to date:</p> <ul style="list-style-type: none"> <li>- County-wide Planning Meetings: February 25 (kick-off planning meeting), April 20<sup>th</sup></li> <li>- Development of several tools: Water Utility Water Distribution Template, City Water Distribution Template, Point of Distribution (POD) Site Evaluation Checklist, and a POD Supplies Checklist.</li> <li>- Presentation to MWDOC's A&amp;F Committee, the MWDOC Member Agency Manager's meeting, and the Orange County Emergency Management Organization (OCEMO).</li> <li>- Laguna Small Group Meetings: May 17<sup>th</sup> and June 14<sup>th</sup>. Participants: Cities of Laguna Beach, Dana Point, San Clemente, Aliso Viejo, Laguna Niguel; Special districts of LBCWD, SCWD, and Emerald Bay Service District; and the County Emergency Management Division</li> </ul> <p>UPDATE: The county has been divided into 9 small planning groups based on geography and similar planning needs. This Laguna group identified the necessary planning steps for each of the other small groups during their meetings. The next 8 groups will meet in July and August.</p> <p>Kelly Hubbard scheduled a phone call with Andrew Lockman, Tulare County Emergency Manager, to be briefed on lessons learned from running water distribution points for the past two years due to drought. Andrew shared great lessons that can be applied to the Orange County planning process.</p> <p>Kelly attended a California Office of Emergency Services (CalOES) Commodities Movement Exercise at the Los Alamitos Joint Forces Training Base. The exercise was designed to show participants the steps needed for the State and the National Guard to move commodities during a disaster (including water.) Kelly has since been asked to sit on the state-wide commodities planning team.</p>

<b>Description</b>	<b>Comments</b>
<b>Coordination with the County of Orange</b>	Kelly attended an initial training webinar for the new AlertOC systems software. Shenandoah Hage (temp. WEROC Admin support) and Bryce Roberto (Public Affairs) attended in person training for the system.
<b>Coordination with Outside Agencies</b>	Kelly participated in a state-wide Emergency Managers Mutual Aid (EMMA) Plan conference call. This is the plan that Kelly deployed under to Lake County through during the Valley Fire. The response and the use of the plan had significant challenges and in response the State is revising this plan.
<b>WEROC Emergency Operations Center (EOC) Readiness</b>	<p>Staff participated in the OC Operational Area Radio Test and the MARS Radio test.</p> <p>Shenandoah Hage, MWDOC Office Assistant, has been assisting the WEROC program while the WEROC Coordinator position is vacant. Shenandoah is working on an update to the 4 plans that are in the Safety Center phone application, including a significant update to the contacts within the app. She has also started updating those same contacts with AlertOC for reverse notification purposes.</p> <p>Kelly met with ATT at the South EOC for repairs to 3 phone lines. Those lines were restored.</p>

## Status of Water Use Efficiency Projects

June 2016

<b>Description</b>	<b>Lead Agency</b>	<b>Status % Complete</b>	<b>Scheduled Completion or Renewal Date</b>	<b>Comments</b>
<b>Smart Timer Rebate Program</b>	MWDSC	Ongoing	Ongoing	For May 2016, 208 residential and 2,645 commercial smart timers were installed in Orange County.  For program water savings and implementation information, please see MWDSC Water Use Efficiency Program Savings and Implementation Report.
<b>Rotating Nozzles Rebate Program</b>	MWDSC	Ongoing	Ongoing	For May 2016, 4,906 rotating nozzles were installed in Orange County.  For program savings and implementation information, please see MWDSC Water Use Efficiency Program Savings and Implementation Report.
<b>Water Smart Landscape Program</b>	MWDSC	Ongoing	On hold pending evaluation and RFP process	This Program is currently on hold while a Process and Impact Evaluation is conducted. Once the Evaluation is complete, the results will be used to make refinements to the Program.  For program savings and implementation information, please see MWDSC Water Use Efficiency Program Savings and Implementation Report.
<b>SoCal WaterSmart Residential Indoor Rebate Program</b>	MWDSC	Ongoing	Ongoing	In May 2016, 569 high efficiency clothes washers, 24 high efficiency toilets, and 212 premium high efficiency toilets were installed through this program.  For program savings and implementation information, please see MWDSC Water Use Efficiency Program Savings and Implementation Report.



<b>SoCal Water\$mart Commercial Rebate Program</b>	MWDSC	On-going	On-going	<p>In May 2016, 2 high efficiency toilets, 897 multi-family high efficiency toilets, and 2 premium high efficiency toilets, were installed through this program.</p> <p>For program savings and implementation information, please see MWDDOC Water Use Efficiency Program Savings and Implementation Report.</p>
<b>Industrial Process Water Use Reduction Program</b>	MWDDOC	September 2016	95%	<p>A total of 41 Focused Surveys and 19 Comprehensive Surveys have been completed or are in progress. To date, 15 companies have signed Incentive Agreements. Updated discharger lists have been obtained, and outreach is continuing to sites with feasible water savings potential. As a result of this program, 359 AFY of water savings is being achieved.</p>
<b>MWDDOC Conservation Meeting</b>	MWDDOC	Monthly	On-going	<p>This month's meeting was held on June 2, 2016 at MWDDOC. The next meeting will be on July 7, 2016 at the City of San Clemente.</p>
<b>Metropolitan Conservation Meeting</b>	MWDSC	Monthly	On-going	<p>This month's meeting was held on June 16, 2016. The next meeting will be July 21, 2016 at Metropolitan.</p>
<b>Turf Removal Program</b>	MWDDOC	Ongoing	On-going	<p>In May 2016, 613 rebates were paid, representing \$2,894,233.96 in rebates paid this month in Orange County. To date, the Turf Removal Program has removed approximately 20 million square feet of turf.</p> <p>For program savings and implementation information, please see MWDDOC Water Use Efficiency Program Savings and Implementation Report.</p>
<b>California Sprinkler Adjustment Notification System – Base Irrigation Schedule Calculator</b>	MWDDOC	April 2016	95%	<p>The California Sprinkler Adjustment Notification System (CSANS) will e-mail or “push” an irrigation index to assist property owners with making global irrigation scheduling adjustments. Participants voluntarily register to receive this e-mail at <a href="http://www.csans.net">www.csans.net</a> and can unsubscribe at any time.</p> <p>Through a grant from the Department of Water Resources (DWR) to the California Urban Water Conservation Council, the East Bay Municipal Utility District and Bay Area Water</p>

<b>California Sprinkler Adjustment Notification System – Base Irrigation Schedule Calculator (cont.)</b>				<p>Supply and Conservation Agency are now being enrolled in CSANS. Once this has been completed, staff will be pursuing DWR for administration of CSANS state-wide.</p> <p>The following member agencies have recently requested access to the CSANS to administer their own messages to their customers: City of Brea, Mesa Water District, City of San Juan Capistrano, and Laguna Beach County WD. MWDOC will work with these agencies over the next month to transition administration of CSANS to these agencies. All other agencies are currently receiving educational messages administered by MWDOC.</p>
<b>Spray to Drip Conversion Program</b>	MWDOC	68%	October 2017	<p>This is a pilot program designed to test the efficacy of replacing conventional spray heads in shrub beds with low-volume, low-precipitation drip technology. Through a rebate program format, residential and commercial sites will be encouraged to convert their existing spray nozzles to drip.</p> <p>To date, 193 residential sites and 52 commercial sites have completed spray to drip conversion projects.</p>

# Orange County

## Water Use Efficiency Programs Savings and Implementation Report

### Retrofits and Acre-Feet Water Savings for Program Activity

Program	Program Start Date	Retrofits Installed in	Month Indicated		Current Fiscal Year		Overall Program	
			Interventions	Water Savings	Interventions	Water Savings	Interventions	Cumulative Water Savings[4]
High Efficiency Clothes Washer Program	2001	May-16	569	1.63	4,880	86.48	108,247	20,795
Smart Timer Program - Irrigation Timers	2004	May-16	2,853	142.82	4,269	328.36	17,336	31,012
Rotating Nozzles Rebate Program	2007	May-16	4,906	19.62	60,323	1,336.44	521,193	9,889
SoCal WaterSmart Commercial Plumbing Fixture Rebate Program	2002	May-16	901	1.85	20,061	224.50	68,227	34,654
Water Smart Landscape Program [1]	1997	November-15	12,677	904.62	12,677	3,615.21	12,677	72,668
Industrial Process Water Use Reduction Program	2006	May-16	0	11.41	1	11.41	15	1,679
Turf Removal Program <sup>[3]</sup>	2010	June-16	1,415,850	16.51	12,505,798	780	20,023,471	4,331
High Efficiency Toilet (HET) Program	2005	May-16	236	0.84	12,173	431.49	58,447	11,612
Home Water Certification Program	2013	November-15	0	0.000	53	0.251	312	15,266
Synthetic Turf Rebate Program	2007						685,438	469
Ultra-Low-Flush-Toilet Programs [2]	1992						363,926	162,561
Home Water Surveys [2]	1995						11,867	1,708
Showerhead Replacements [2]	1991						270,604	19,083
<b>Total Water Savings All Programs</b>			<b>1,099</b>	<b>6,814</b>	<b>12,620,235</b>	<b>6,814</b>	<b>22,141,760</b>	<b>370,477</b>

a. Water Smart Landscape Program participation is based on the number of water meters receiving monthly Irrigation Performance Reports.  
b. Cumulative Water Savings Program To Date totals are from a previous Water Use Efficiency Program Effort.  
c. Turf Removal Interventions are listed as square feet.  
d. Cumulative & annual water savings represents both active program savings and passive savings that continues to be realized due to plumbing code changes over time.

# **HIGH EFFICIENCY CLOTHES WASHERS INSTALLED BY AGENCY**

through MWDOC and Local Agency Conservation Programs

Agency	FY 06/07	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Total	Current FY Water Savings Ac/Ft (Cumulative)	Cumulative Water Savings across all Fiscal Years	15 yr. Lifecycle Savings Ac/Ft
Brea	132	175	156	42	186	144	93	115	114	74	1,808	1.43	347.98	936
Buena Park	85	114	146	59	230	145	105	106	91	60	1,448	0.98	264.37	749
East Orange CWD RZ	18	22	17	3	23	10	10	8	8	7	188	0.15	38.31	97
El Toro WD	91	113	130	32	162	112	134	121	111	61	1,470	1.13	268.58	761
Fountain Valley	205	219	243	72	289	158	115	102	110	74	2,333	1.34	468.82	1,207
Garden Grove	238	304	332	101	481	236	190	162	165	145	3,330	2.28	645.48	1,723
Golden State WC	339	401	447	168	583	485	265	283	359	238	4,855	4.27	913.88	2,512
Huntington Beach	761	750	751	211	963	582	334	295	319	218	8,059	3.69	1,653.75	4,170
Irvine Ranch WD	1,972	2,052	1,844	1,394	2,621	2,170	1,763	1,664	1,882	1,458	23,230	25.32	4,188.06	12,020
La Habra	96	136	83	22	179	128	82	114	87	58	1,266	0.99	231.42	655
La Palma	33	35	51	25	76	46	34	25	34	28	447	0.43	79.54	231
Laguna Beach CWD	57	77	77	27	96	57	38	37	39	30	911	0.72	181.27	471
Mesa Water	239	249	246	73	232	176	114	86	89	89	2,414	1.33	500.81	1,249
Moulton Niguel WD	652	716	742	250	1,127	679	442	421	790	678	9,336	12.48	1,703.51	4,831
Newport Beach	245	270	259	57	197	142	116	92	95	66	2,563	1.36	541.95	1,326
Orange	366	365	403	111	349	262	218	163	160	116	3,810	2.11	783.86	1,971
Orange Park Acres	4	8	-	-	-	-	-	-	-	-	12	0.00	3.09	6
San Juan Capistrano	109	103	127	43	190	110	76	73	92	59	1,422	1.24	271.94	736
San Clemente	204	261	278	63	333	206	140	94	141	74	2,549	1.44	495.78	1,319
Santa Margarita WD	654	683	740	257	1,105	679	553	662	792	454	9,137	8.33	1,668.75	4,728
Seal Beach	47	46	57	7	81	51	31	29	38	22	592	0.46	113.49	306
Serrano WD	30	31	23	7	21	20	13	10	26	7	345	0.15	71.97	179
South Coast WD	107	130	148	43	183	112	89	79	68	43	1,540	0.87	298.01	797
Trabuco Canyon WD	69	60	62	28	82	62	30	45	47	34	770	0.67	147.05	398
Tustin	152	146	144	45	174	97	78	59	80	61	1,563	1.12	315.38	809
Westminster	213	171	233	74	329	208	121	82	109	96	2,449	1.45	483.01	1,267
Yorba Linda	288	350	367	117	394	273	181	167	156	122	3,695	2.31	752.09	1,912
<b>MWDOC Totals</b>	<b>7,406</b>	<b>7,987</b>	<b>8,106</b>	<b>3,331</b>	<b>10,686</b>	<b>7,350</b>	<b>5,365</b>	<b>5,094</b>	<b>6,002</b>	<b>4,372</b>	<b>91,542</b>	<b>78.05</b>	<b>17,432.16</b>	<b>17,686</b>
Anaheim	854	847	781	860	910	477	331	285	295	221	10,424	3.87	2,142.34	5,394
Fullerton	269	334	330	69	397	270	200	186	211	147	3,570	2.51	645.84	1,847
Santa Ana	236	235	257	87	355	190	163	131	132	140	2,711	2.04	574.35	1,403
<b>Non-MWDOC Totals</b>	<b>1,359</b>	<b>1,416</b>	<b>1,368</b>	<b>1,016</b>	<b>1,662</b>	<b>937</b>	<b>694</b>	<b>602</b>	<b>638</b>	<b>508</b>	<b>16,705</b>	<b>8.43</b>	<b>3,362.53</b>	<b>3,227</b>
<b>Orange County Totals</b>	<b>8,765</b>	<b>9,403</b>	<b>9,474</b>	<b>4,347</b>	<b>12,348</b>	<b>8,287</b>	<b>6,059</b>	<b>5,696</b>	<b>6,640</b>	<b>4,880</b>	<b>108,247</b>	<b>86.48</b>	<b>20,794.69</b>	<b>20,913</b>

**SMART TIMERS INSTALLED BY AGENCY**  
through MWDOC and Local Agency Conservation Programs

Agency	FY 08/09		FY 09/10		FY 10/11		FY 11/12		FY 12/13		FY 13/14		FY 14/15		FY 15/16		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	
Brea	3	9	0	0	2	0	8	0	9	8	4	0	43	6	20	4	100	76	401.61
Buena Park	3	1	0	0	0	0	4	19	3	0	0	0	4	10	6	4	20	34	88.71
East Orange CWD RZ	0	0	0	0	0	1	5	0	2	0	0	0	2	0	0	0	13	0	3.60
El Toro WD	0	25	2	18	5	5	26	2	7	2	11	0	8	9	8	17	81	347	1,987.66
Fountain Valley	1	0	0	6	2	2	8	2	3	2	4	0	7	10	12	1	57	28	116.13
Garden Grove	2	1	6	0	5	4	7	0	5	2	9	0	10	14	11	11	71	38	112.21
Golden State WC	1	2	9	22	7	4	13	3	9	49	9	25	39	12	33	15	167	154	531.84
Huntington Beach	13	1	6	27	6	36	15	4	18	33	20	35	19	2	41	11	183	173	674.17
Irvine Ranch WD	29	56	14	145	28	153	267	71	414	135	71	59	67	310	227	207	1,413	1,866	8,073.13
La Habra	0	0	0	21	0	0	3	0	4	7	2	0	4	7	3	1	24	37	140.48
La Palma	0	0	0	0	0	0	1	0	1	0	2	0	2	0	2	2	8	2	2.32
Laguna Beach CWD	2	0	2	14	4	1	109	2	76	2	71	0	86	0	84	1	468	20	162.07
Mesa Water	6	7	13	7	7	22	21	0	10	2	15	2	17	28	35	12	168	113	496.13
Moulton Niguel WD	21	23	17	162	36	60	179	31	51	74	40	45	46	95	158	92	673	664	2,406.23
Newport Beach	10	27	7	58	6	0	275	12	242	26	168	75	11	9	28	43	1,008	397	1,968.78
Orange	5	2	2	13	5	8	25	0	20	24	13	9	18	31	49	13	214	155	678.80
San Juan Capistrano	10	0	7	49	13	1	103	2	14	18	6	11	6	19	18	8	198	117	453.41
San Clemente	81	20	13	209	46	11	212	17	26	7	28	2	28	24	23	3	1,011	361	2,054.69
Santa Margarita WD	25	44	10	152	61	53	262	7	53	171	64	93	53	321	173	68	812	1,083	3,617.35
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Seal Beach	0	0	0	1	0	0	0	3	1	0	1	36	1	12	2	2,446	5	2,498	1,750.58
Serrano WD	0	0	11	0	4	0	3	0	1	0	0	0	4	0	11	2	34	2	7.76
South Coast WD	11	6	3	10	13	3	78	10	13	16	8	4	104	73	9	11	271	212	836.52
Trabuco Canyon WD	1	0	2	0	2	10	12	0	6	0	2	0	6	1	15	50	89	154	729.34
Tustin	7	9	10	14	10	0	11	0	8	4	9	1	18	14	30	8	107	57	218.02
Westminster	3	0	3	0	1	1	2	0	1	1	2	0	13	17	7	1	48	32	131.74
Yorba Linda	8	5	5	21	25	0	22	0	20	0	12	5	32	2	58	23	263	108	545.98
<b>MWDOC Totals</b>	<b>242</b>	<b>238</b>	<b>142</b>	<b>949</b>	<b>289</b>	<b>374</b>	<b>1,671</b>	<b>185</b>	<b>1,017</b>	<b>583</b>	<b>571</b>	<b>402</b>	<b>648</b>	<b>1,026</b>	<b>1,063</b>	<b>3,054</b>	<b>7,506</b>	<b>8,728</b>	<b>28,189.04</b>
Anaheim	9	59	5	46	12	11	23	60	19	10	9	26	7	52	29	34	156	447	1,968.29
Fullerton	2	2	2	39	9	33	22	51	9	29	8	0	40	26	28	12	142	192	647.09
Santa Ana	2	4	1	8	8	0	6	5	8	19	7	8	9	27	22	26	67	97	207.88
<b>Non-MWDOC Totals</b>	<b>13</b>	<b>65</b>	<b>8</b>	<b>93</b>	<b>29</b>	<b>44</b>	<b>51</b>	<b>116</b>	<b>36</b>	<b>58</b>	<b>24</b>	<b>34</b>	<b>56</b>	<b>105</b>	<b>79</b>	<b>72</b>	<b>365</b>	<b>736</b>	<b>2,823.25</b>
<b>Orange County Totals</b>	<b>255</b>	<b>303</b>	<b>150</b>	<b>1,042</b>	<b>318</b>	<b>418</b>	<b>1,722</b>	<b>301</b>	<b>1,053</b>	<b>641</b>	<b>595</b>	<b>436</b>	<b>704</b>	<b>1,131</b>	<b>1,142</b>	<b>3,126</b>	<b>7,871</b>	<b>9,464</b>	<b>31,012</b>

**ROTATING NOZZLES INSTALLED BY AGENCY**  
through MWDOC and Local Agency Conservation Programs

Agency	FY 10/11			FY 11/12			FY 12/13			FY 13/14			FY 14/15			FY 15/16			Total Program			Cumulative Water Savings across all Fiscal Years
	Res	Large		Res	Small		Res	Large		Res	Small		Res	Large		Res	Small		Res	Large		
		Comm.	Comm.		Comm.	Comm.		Comm.	Comm.		Comm.	Comm.		Comm.	Comm.		Comm.	Comm.		Comm.	Comm.	
Brea	32	0	0	130	0	0	65	120	0	84	0	0	157	45	0	74	2,484	0	572	2,749	0	20.57
Buena Park	29	0	0	32	0	0	65	0	0	53	0	0	248	0	0	45	98	0	509	173	2,535	451.38
East Orange	0	0	0	340	0	0	55	0	0	30	0	0	221	0	0	0	0	0	751	0	9.60	
El Toro	174	0	0	357	76	0	23	6,281	0	56	3,288	0	1,741	28,714	0	730	4,457	0	3,314	45,980	890	638.35
Fountain Valley	83	0	0	108	0	0	35	0	0	0	0	0	107	0	0	222	0	0	710	0	8.76	
Garden Grove	38	0	0	119	0	0	95	0	0	80	0	0	88	50	0	110	0	0	878	201	0	17.42
Golden State	303	943	0	294	0	0	257	2,595	0	192	0	0	583	1,741	0	1,088	0	0	3,241	5,308	0	106.98
Huntington Beach	203	625	0	458	0	0	270	0	0	120	0	0	798	1,419	0	1,345	2,836	0	3,648	9,164	2,681	756.92
Irvine Ranch	2,411	2,861	0	1,715	4,255	0	25,018	1,014	0	11,010	4,257	0	1,421	632	0	1,917	5,047	0	46,730	85,050	2,004	2,679.09
La Habra	0	0	0	33	90	0	0	0	0	15	0	0	109	338	0	300	0	0	481	1,236	900	218.61
La Palma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	505	0	56	505	0	2.44
Laguna Beach	156	0	0	763	0	0	3,596	0	0	2,948	878	0	2,879	1,971	0	1,390	0	0	12,139	2,896	0	169.98
Mesa Water	118	0	0	297	277	0	270	0	0	361	0	0	229	0	0	166	0	0	1,917	385	343	117.61
Moulton Niguel	1,578	0	0	1,225	0	0	512	1,385	0	361	227	0	1,596	4,587	0	5,492	1,441	0	11,721	14,643	2,945	931.05
Newport Beach	337	1,208	0	640	3,273	0	25,365	50	0	19,349	6,835	0	460	3,857	0	348	670	0	46,678	21,413	0	950.38
Orange	135	30	0	343	0	0	264	0	0	245	120	0	304	668	0	631	91	0	3,170	1,072	0	59.98
San Clemente	2,612	851	0	4,266	117	1,343	631	172	0	415	5,074	0	326	0	0	426	0	0	9,989	7,538	1,343	387.59
San Juan Capistrano	1,452	0	0	949	0	0	684	30	0	370	0	0	495	737	0	310	593	0	5,420	8,729	0	243.37
Santa Margarita	3,959	3,566	0	4,817	0	0	983	0	0	389	0	0	1,207	1,513	0	1,727	837	0	16,057	6,921	611	422.91
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0	40	5,261	0	0	2,300	0	155	7,852	0	60.16
Serrano	364	0	0	58	0	0	190	0	0	105	0	0	377	0	0	695	0	0	3,405	0	0	49.76
South Coast	318	1,772	0	688	359	0	435	0	0	70	0	0	4,993	13,717	0	1,421	2,889	0	8,114	18,870	0	229.18
Trabuco Canyon	0	0	0	379	0	0	34	0	0	0	0	0	56	0	0	130	0	0	2,086	791	0	52.64
Tustin	512	0	0	476	1,013	0	378	0	0	329	0	0	408	0	0	317	386	0	3,306	1,399	0	62.21
Westminster	0	0	0	26	0	0	15	0	0	0	0	0	54	0	0	73	0	0	359	0	0	5.54
Yorba Linda	529	0	0	559	0	0	730	0	0	40	990	0	921	0	0	1,715	0	0	5,868	4,359	500	259.95
MWDOC Totals	15,343	11,856	0	19,072	9,460	1,343	59,970	11,647	0	36,622	21,669	0	19,818	65,250	0	20,718	24,634	0	191,274	247,234	14,752	8,912.43
Anaheim	372	382	0	742	38,554	0	459	813	0	338	0	0	498	712	0	794	5,221	0	3,873	45,846	105	578.44
Fullerton	416	0	0	409	0	0	119	0	0	107	0	0	684	1,196	0	521	7,015	0	2,845	8,275	1,484	335.46
Santa Ana	53	0	0	22	65	0	99	0	0	86	2,533	0	310	0	0	0	1,420	0	859	4,646	0	63.15
Non-MWDOC Totals	841	382	0	1,173	38,619	0	677	813	0	531	2,533	0	1,492	1,908	0	1,315	13,656	0	7,577	58,767	1,589	977.05
Orange County Totals	16,184	12,238	0	20,245	48,079	1,343	60,647	12,460	0	37,153	24,202	0	21,310	67,158	0	22,033	38,290	0	198,851	306,001	16,341	9,889.48

# SOCAL WATER\$MART COMMERCIAL PLUMBING FIXTURES REBATE PROGRAM<sup>[1]</sup>

## INSTALLED BY AGENCY

through MWDOD and Local Agency Conservation Programs

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Totals	Cumulative Water Savings across all Fiscal Years
Brea	27	113	24	4	1	234	0	10	91	631	348
Buena Park	153	432	122	379	290	5	23	56	591	2,356	934
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	0	0
El Toro WD	0	92	143	1	137	0	212	6	268	1,027	519
Fountain Valley	17	35	0	2	314	0	0	1	249	872	523
Garden Grove	5	298	130	22	0	4	1	167	520	1,885	1,318
Golden State WC	46	414	55	68	135	0	1	0	1,008	2,812	1,708
Huntington Beach	48	104	126	96	156	104	144	7	783	2,313	1,377
Irvine Ranch WD	121	789	2,708	1,002	646	1,090	451	725	9,673	20,481	6,125
La Habra	191	75	53	4	0	0	0	0	172	715	481
La Palma	0	140	21	0	0	0	0	0	0	166	74
Laguna Beach CWD	20	137	189	0	0	0	27	0	0	446	281
Mesa Water	141	543	219	669	41	6	0	79	661	3,472	1,831
Moulton Niguel WD	9	69	151	6	0	0	0	3	413	996	735
Newport Beach	98	27	245	425	35	0	0	566	0	1,834	1,144
Orange	18	374	67	1	73	1	271	81	275	2,179	1,568
San Juan Capistrano	2	1	1	0	0	0	14	0	0	260	367
San Clemente	2	18	43	0	19	0	0	1	0	432	350
Santa Margarita WD	6	23	11	0	0	0	0	2	90	207	186
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0
Seal Beach	1	2	124	0	0	0	0	0	0	354	383
Serrano WD	0	0	0	0	0	0	0	0	0	0	0
South Coast WD	9	114	56	422	84	148	0	382	0	1,320	441
Trabuco Canyon WD	0	4	0	0	0	0	0	0	0	11	14
Tustin	115	145	25	230	0	0	0	75	358	1,190	731
Westminster	40	161	16	63	35	1	28	0	146	961	903
Yorba Linda	10	24	8	30	0	1	0	0	226	511	501
<b>MWDOD Totals</b>	<b>1,079</b>	<b>4,134</b>	<b>4,537</b>	<b>3,424</b>	<b>1,966</b>	<b>1,594</b>	<b>1,172</b>	<b>2,161</b>	<b>15,524</b>	<b>47,431</b>	<b>22,839</b>
Anaheim	766	3,298	582	64	48	165	342	463	2,900	13,272	6,171
Fullerton	133	579	29	4	0	94	0	178	476	2,157	1,443
Santa Ana	493	815	728	39	12	16	17	5	1,161	5,367	4,200
<b>Non-MWDOD Totals</b>	<b>1,392</b>	<b>4,692</b>	<b>1,339</b>	<b>107</b>	<b>60</b>	<b>275</b>	<b>359</b>	<b>646</b>	<b>4,537</b>	<b>20,796</b>	<b>11,815</b>
<b>Orange County Totals</b>	<b>2,471</b>	<b>8,826</b>	<b>5,876</b>	<b>3,531</b>	<b>2,026</b>	<b>1,869</b>	<b>1,531</b>	<b>2,807</b>	<b>20,061</b>	<b>68,227</b>	<b>34,654</b>

[1] Retrofit devices include ULF Toilets and Urinals, High Efficiency Toilets and Urinals, Multi-Family and Multi-Family 4-Liter HETs, Zero Water Urinals, High Efficiency Clothes Washers, Cooling Tower Conductivity Controllers, Ph Cooling Tower Conductivity Controllers, Flush Valve Retrofit Kits, Pre-rinse Spray heads, Hospital X-Ray Processor Recirculating Systems, Steam Sterilizers, Food Steamers, Water Pressurized Brooms, Laminar Flow Restrictors, and Ice Making Machines.

## Water Smart Landscape Program

Total Number of Meters  
in Program by Agency

Agency	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Overall Water Savings To Date (AF)
Brea	0	0	0	0	0	22	22	22	22	22	64.37
Buena Park	0	0	0	17	103	101	101	101	101	101	462.69
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	0	0.00
El Toro WD	227	352	384	371	820	810	812	812	812	812	4,856.93
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0.00
Garden Grove	0	0	0	0	0	0	0	0	0	0	0.00
Golden State WC	0	14	34	32	34	32	32	32	32	32	200.59
Huntington Beach	0	0	0	31	33	31	31	31	31	31	148.43
Irvine Ranch WD	646	708	1,008	6,297	6,347	6,368	6,795	6,797	6,769	6,780	38,304.89
Laguna Beach CWD	0	0	57	141	143	141	124	124	124	124	733.07
La Habra	0	0	23	22	24	22	22	22	22	22	136.72
La Palma	0	0	0	0	0	0	0	0	0	0	0.00
Mesa Water	138	165	266	265	288	450	504	511	514	515	2,943.57
Moulton Niguel WD	113	180	473	571	595	643	640	675	673	661	4,120.71
Newport Beach	23	58	142	171	191	226	262	300	300	300	1,501.19
Orange	0	0	0	0	0	0	0	0	0	0	0.00
San Clemente	204	227	233	247	271	269	269	299	407	459	2,368.77
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0.00
Santa Margarita WD	618	945	1,571	1,666	1,746	1,962	1,956	2,274	2,386	2,386	14,178.10
Seal Beach	0	0	0	0	0	0	0	0	0	0	0.00
Serrano WD	0	0	0	0	0	0	0	0	0	0	0.00
South Coast WD	0	62	117	108	110	118	118	118	164	164	829.91
Trabuco Canyon WD	0	12	49	48	62	60	60	60	60	60	350.52
Tustin	0	0	0	0	0	0	0	0	0	0	0.00
Westminster	0	10	18	18	20	18	18	18	18	18	116.46
Yorba Linda WD	0	0	0	0	0	0	0	0	0	0	0.00
<b>MWDOC Totals</b>	<b>1,969</b>	<b>2,733</b>	<b>4,395</b>	<b>10,025</b>	<b>10,787</b>	<b>11,273</b>	<b>11,766</b>	<b>12,196</b>	<b>12,435</b>	<b>12,487</b>	<b>71,316.9</b>
Anaheim	0	0	0	142	146	144	190	190	190	190	1,351.53
Fullerton	0	0	0	0	0	0	0	0	0	0	0.00
Santa Ana	0	0	0	0	0	0	0	0	0	0	0.00
<b>Non-MWDOC Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>142</b>	<b>146</b>	<b>144</b>	<b>190</b>	<b>190</b>	<b>190</b>	<b>190</b>	<b>1,351.53</b>
<b>Orange Co. Totals</b>	<b>1,969</b>	<b>2,733</b>	<b>4,395</b>	<b>10,167</b>	<b>10,933</b>	<b>11,417</b>	<b>11,956</b>	<b>12,386</b>	<b>12,625</b>	<b>12,677</b>	<b>72,668.45</b>



# INDUSTRIAL PROCESS WATER USE REDUCTION PROGRAM

## Number of Process Changes by Agency

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Overall Program Interventions	Annual Water Savings[1]	Cumulative Water Savings across all Fiscal Years[1]
Brea	0	0	0	0	0	0	0	0	0	0	0	0
Buena Park	0	1	0	0	0	0	0	0	0	1	54	401
East Orange	0	0	0	0	0	0	0	0	0	0	0	0
El Toro	0	0	0	0	0	0	0	0	0	0	0	0
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0	0
Garden Grove	0	0	0	0	0	0	0	0	0	0	0	0
Golden State	1	0	0	0	0	0	0	0	0	1	3	24
Huntington Beach	0	0	0	0	0	2	0	1	0	3	127	319
Irvine Ranch	0	0	2	1	1	1	1	0	0	6	98	431
La Habra	0	0	0	0	0	0	0	0	0	0	0	0
La Palma	0	0	0	0	0	0	0	0	0	0	0	0
Laguna Beach	0	0	0	0	0	0	0	0	0	0	0	0
Mesa Water	0	0	0	0	0	0	0	0	0	0	0	0
Moulton Niguel	0	0	0	0	0	0	0	0	0	0	0	0
Newport Beach	0	0	0	0	0	0	0	1	0	1	21	32
Orange	1	0	0	0	0	0	0	0	1	2	45	360
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0	0
San Clemente	0	0	0	0	0	0	0	0	0	0	0	0
Santa Margarita	0	0	0	0	0	0	0	0	0	0	0	0
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0
Serrano	0	0	0	0	0	0	0	0	0	0	0	0
South Coast	0	0	0	0	0	0	0	0	0	0	0	0
Trabuco Canyon	0	0	0	0	0	0	0	0	0	0	0	0
Tustin	0	0	0	0	0	0	0	0	0	0	0	0
Westminster	0	0	0	0	0	0	0	0	0	0	0	0
Yorba Linda	0	0	0	0	0	0	0	0	0	0	0	0
<b>MWDOC Totals</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>14</b>	<b>348</b>	<b>1567</b>
Anaheim	0	0	0	0	0	0	0	0	0	0	0	0
Fullerton	0	0	0	0	0	0	0	0	0	0	0	0
Santa Ana	0	0	0	0	0	0	0	0	1	1	11	113
<b>OC Totals</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>15</b>	<b>359</b>	<b>1679</b>

[1] Acre feet of savings determined during a one year monitoring period.  
If monitoring data is not available, the savings estimated in agreement is used.

**TURF REMOVAL BY AGENCY<sup>[1]</sup>**  
through MWDOC and Local Agency Conservation Programs

Agency	FY 11/12		FY 12/13		FY 13/14		FY 14/15		FY 15/16		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	3,397	9,466	7,605	0	5,697	0	71,981	30,617	119,793	422,650	208,473	462,733	120,32
Buena Park	0	0	0	0	0	0	11,670	1,626	78,746	41,490	90,416	43,116	20,56
East Orange	0	0	0	0	1,964	0	18,312	0	23,079	0	43,355	0	9,18
El Toro	4,723	0	4,680	72,718	4,582	0	27,046	221,612	65,963	147,868	106,994	442,198	148,13
Fountain Valley	1,300	0	682	7,524	4,252	0	45,583	5,279	67,361	0	119,178	12,803	30,96
Garden Grove	14,013	0	4,534	0	8,274	0	67,701	22,000	176,667	55,755	271,189	123,932	112,26
Golden State	42,593	30,973	31,813	3,200	32,725	8,424	164,507	190,738	310,264	112,937	581,902	346,272	247,10
Huntington Beach	27,630	48,838	9,219	12,437	20,642	0	165,600	58,942	311,443	260,820	535,335	384,688	221,05
Irvine Ranch	6,450	1,666	32,884	32,384	36,584	76,400	234,905	317,999	746,971	2,671,672	1,063,217	3,112,915	738,39
La Habra	0	8,262	0	0	0	0	14,014	1,818	48,119	72,164	62,133	90,019	33,59
La Palma	0	0	0	0	0	0	4,884	0	11,089	59,760	15,973	59,760	11,29
Laguna Beach	2,533	0	2,664	1,712	4,586	226	13,647	46,850	47,614	0	72,022	48,788	30,67
Mesa Water	6,777	0	10,667	0	22,246	0	131,675	33,620	212,718	189,563	384,083	223,183	122,66
Moulton Niguel	4,483	26,927	11,538	84,123	14,739	40,741	314,250	1,612,845	850,724	1,052,140	1,196,690	2,832,915	919,19
Newport Beach	3,454	0	3,548	2,346	894	0	33,995	65,277	80,049	375,404	121,940	443,027	97,65
Orange	12,971	0	15,951	8,723	11,244	0	120,093	281,402	277,797	144,943	438,056	435,068	199,22
San Clemente	21,502	0	16,062	13,165	18,471	13,908	90,349	1,137	231,650	432,106	378,034	460,316	163,56
San Juan Capistrano	22,656	103,692	29,544	27,156	12,106	0	101,195	32,366	198,690	155,570	364,191	318,784	212,27
Santa Margarita	1,964	11,400	10,151	11,600	17,778	48,180	211,198	514,198	482,355	484,902	727,929	1,075,841	396,19
Seal Beach	0	0	3,611	0	0	0	15,178	504	16,897	15,911	35,686	16,415	11,01
Serrano	0	0	0	0	2,971	0	41,247	0	127,877	4,403	172,095	4,403	31,32
South Coast	6,806	0	9,429	4,395	15,162	116,719	84,282	191,853	181,268	128,290	296,947	457,581	202,26
Trabuco Canyon	272	0	1,542	22,440	2,651	0	14,771	0	42,720	88,272	61,956	110,712	37,21
Tustin	0	0	9,980	0	1,410	0	71,285	14,137	248,062	39,542	330,737	53,679	70,36
Westminster	0	0	0	0	0	0	14,040	34,631	76,599	23,902	90,639	58,533	27,70
Yorba Linda	0	0	0	0	0	0	112,136	12,702	374,234	116,985	497,719	129,687	113,26
<b>MWDOC Totals</b>	<b>183,524</b>	<b>241,224</b>	<b>216,104</b>	<b>303,923</b>	<b>238,978</b>	<b>304,598</b>	<b>2,195,544</b>	<b>3,692,153</b>	<b>5,408,749</b>	<b>7,097,049</b>	<b>8,266,889</b>	<b>11,747,368</b>	<b>4,327,34</b>

Anaheim	0	0	0	0	0	0	0	0	0	0	0	0	-
Fullerton	0	0	0	0	0	0	0	0	0	0	0	9,214	3,87
Sanita Ana	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Non-MWDOC Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,214</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,214</b>	<b>3,87</b>

<b>Orange County Totals</b>	<b>183,524</b>	<b>241,224</b>	<b>216,104</b>	<b>303,923</b>	<b>238,978</b>	<b>313,812</b>	<b>2,195,544</b>	<b>3,692,153</b>	<b>5,408,749</b>	<b>7,097,049</b>	<b>8,266,889</b>	<b>11,756,582</b>	<b>4,331</b>
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[1] Installed device numbers are listed as square feet

# **HIGH EFFICIENCY TOILETS (HETS) INSTALLED BY AGENCY** through MWDOC and Local Agency Conservation Programs

Agency	FY05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Total	Cumulative Water Savings across all Fiscal Years
Brea	0	2	7	43	48	8	0	0	38	146	154	446	58.35
Buena Park	0	1	2	124	176	7	0	0	96	153	112	671	127.68
East Orange CWD RZ	0	0	0	12	1	0	0	0	13	26	24	86	13.11
El Toro WD	0	392	18	75	38	18	0	133	218	869	263	2,024	350.81
Fountain Valley	0	69	21	262	54	17	0	0	41	132	220	816	172.87
Garden Grove	0	14	39	443	181	24	0	0	63	350	361	1,475	284.98
Golden State WC	2	16	36	444	716	37	80	2	142	794	512	2,781	520.33
Huntington Beach	2	13	59	607	159	76	0	0	163	1,190	625	2,894	451.21
Irvine Ranch WD	29	1,055	826	5,088	2,114	325	0	1,449	810	1,777	2,771	16,244	3,843.34
Laguna Beach CWD	0	2	17	91	28	11	0	0	45	112	81	387	68.22
La Habra	0	3	18	296	34	20	0	0	37	94	83	585	140.44
La Palma	0	1	10	36	26	13	0	0	21	59	52	218	37.49
Mesa Water	0	247	19	736	131	7	0	0	147	162	162	1,611	443.25
Moulton Niguel WD	0	20	104	447	188	46	0	0	400	2,497	1,938	5,640	614.38
Newport Beach	0	5	19	163	54	13	0	0	49	168	241	712	115.12
Orange	1	20	62	423	79	40	0	1	142	978	415	2,161	329.71
San Juan Capistrano	0	10	7	76	39	11	0	0	35	140	199	517	72.10
San Clemente	0	7	22	202	66	21	0	0	72	225	243	858	143.99
Santa Margarita WD	0	5	14	304	151	44	0	0	528	997	1,067	3,110	364.90
Seal Beach	0	678	8	21	12	1	0	2	17	50	66	855	312.17
Serrano WD	2	0	1	13	5	0	0	0	2	40	52	115	13.11
South Coast WD	2	2	29	102	41	12	23	64	102	398	235	1,010	135.59
Trabuco Canyon WD	0	0	4	23	23	0	0	0	10	108	166	334	33.75
Tustin	0	186	28	387	479	17	0	0	64	132	201	1,494	396.65
Westminster	0	17	25	541	167	23	0	0	35	161	359	1,328	290.08
Yorba Linda WD	0	14	89	323	96	18	0	0	40	280	379	1,239	228.29
<b>MWDOC Totals</b>	<b>38</b>	<b>2,779</b>	<b>1,494</b>	<b>11,282</b>	<b>5,106</b>	<b>809</b>	<b>103</b>	<b>1,651</b>	<b>3,330</b>	<b>12,038</b>	<b>10,981</b>	<b>49,611</b>	<b>9,561.93</b>

Anaheim	0	255	78	2,771	619	114	0	0	156	1,188	613	5,794	1,442.50
Fullerton	0	4	28	286	60	23	0	0	61	293	286	1,041	178.45
Santa Ana	0	11	25	925	89	23	0	0	33	602	293	2,001	429.51
<b>Non-MWDOC Totals</b>	<b>0</b>	<b>270</b>	<b>131</b>	<b>3,982</b>	<b>768</b>	<b>160</b>	<b>0</b>	<b>0</b>	<b>250</b>	<b>2,083</b>	<b>1,192</b>	<b>8,836</b>	<b>2,050.45</b>

<b>Orange County Totals</b>	<b>38</b>	<b>3,049</b>	<b>1,625</b>	<b>15,264</b>	<b>5,874</b>	<b>969</b>	<b>103</b>	<b>1,651</b>	<b>3,580</b>	<b>14,121</b>	<b>12,173</b>	<b>58,447</b>	<b>11,612.28</b>
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# HOME WATER SURVEYS PERFORMED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 13/14		FY 14/15		FY 15/16		Total		Cumulative Water Savings
	Surveys	Cert Homes	Surveys	Cert Homes	Surveys	Cert Homes	Surveys	Cert Homes	
Brea	1	0	2	0	0	0	3	0	0.16
Buena Park	0	0	1	0	0	0	1	0	0.05
East Orange	19	0	1	0	0	0	20	0	1.39
El Toro	0	0	3	0	0	0	3	0	0.14
Fountain Valley	3	0	4	0	1	0	8	0	0.42
Garden Grove	0	0	6	0	1	0	7	0	0.31
Golden State	0	0	0	0	0	0	0	0	0.00
Huntington Beach	2	0	5	0	2	0	9	0	0.42
Irvine Ranch	1	0	3	0	6	0	10	0	0.35
La Habra	0	0	1	0	0	0	1	0	0.05
La Palma	0	0	0	0	0	0	0	0	0.00
Laguna Beach	4	0	8	0	1	0	13	0	0.68
Mesa Water	0	0	0	0	0	0	0	0	0.00
Moulton Niguel	4	0	4	0	0	0	8	0	0.47
Newport Beach	2	0	8	0	6	0	16	0	0.66
Orange	2	0	18	0	1	0	21	0	1.01
San Clemente	15	0	13	0	0	0	28	0	1.67
San Juan Capistrano	4	0	13	0	2	0	19	0	0.94
Santa Margarita	15	0	40	1	14	0	69	1	3.27
Seal Beach	0	0	1	0	2	0	3	0	0.09
Serrano	0	0	2	0	0	0	2	0	0.09
South Coast	6	0	4	0	1	0	11	0	0.64
Trabuco Canyon	0	0	4	0	0	0	4	0	0.19
Tustin	0	0	10	0	5	0	15	0	0.59
Westminster	0	0	0	0	0	0	0	0	0.00
Yorba Linda	0	0	13	0	10	0	23	0	0.85
<b>MWDOC Totals</b>	<b>78</b>	<b>0</b>	<b>164</b>	<b>1</b>	<b>52</b>	<b>0</b>	<b>294</b>	<b>1</b>	<b>14.44</b>

Anaheim	0	0	0	0	0	0	0	0	0.00
Fullerton	0	0	17	0	1	0	18	0	0.82
Santa Ana	0	0	0	0	0	0	0	0	0.00
<b>Non-MWDOC Totals</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0.82</b>
<b>Orange County Totals</b>	<b>78</b>	<b>0</b>	<b>181</b>	<b>1</b>	<b>53</b>	<b>0</b>	<b>312</b>	<b>1</b>	<b>15.266</b>

# **SYNTHETIC TURF INSTALLED BY AGENCY<sup>[1]</sup>** through MWDOC and Local Agency Conservation Programs

Agency	FY 07/08		FY 08/09		FY 09/10		FY 10/11		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	0	0	2,153	2,160	500	0	0	0	2,653	2,160	3.30
Buena Park	0	0	1,566	5,850	0	0	0	0	1,566	5,850	5.19
East Orange	0	0	0	0	983	0	0	0	983	0	0.55
El Toro	3,183	0	2,974	0	3,308	0	895	0	10,360	0	6.98
Fountain Valley	11,674	0	1,163	0	2,767	0	684	0	16,288	0	12.46
Garden Grove	1,860	0	0	0	3,197	0	274	0	5,331	0	3.47
Golden State	6,786	0	13,990	0	15,215	0	2,056	0	38,047	0	24.88
Huntington Beach	15,192	591	12,512	0	4,343	1,504	0	0	32,047	2,095	25.29
Irvine Ranch	11,009	876	13,669	0	2,585	0	0	0	27,263	876	21.00
La Habra	0	0	0	0	0	0	0	0	0	0	-
La Palma	429	0	0	0	0	0	0	0	429	0	0.36
Laguna Beach	3,950	0	3,026	0	725	0	0	0	7,701	0	5.84
Mesa Water	4,114	0	3,005	78,118	4,106	0	2,198	0	13,423	78,118	63.46
Moulton Niguel	14,151	0	25,635	2,420	7,432	0	0	0	47,218	2,420	35.69
Newport Beach	2,530	0	6,628	0	270	0	0	0	9,428	0	6.92
Orange	4,169	0	7,191	0	635	0	0	0	11,995	0	8.89
San Clemente	9,328	0	11,250	455	2,514	1,285	500	0	23,592	1,740	18.37
San Juan Capistrano	0	0	7,297	639	2,730	0	4,607	0	14,634	639	9.02
Santa Margarita	12,922	0	26,069	0	21,875	0	7,926	0	68,792	0	44.68
Seal Beach	0	0	817	0	0	0	0	0	817	0	0.57
Serrano	7,347	0	1,145	0	0	0	0	0	8,492	0	6.97
South Coast	2,311	0	6,316	0	17,200	0	1,044	0	26,871	0	16.43
Trabuco Canyon	1,202	0	9,827	0	0	0	0	0	11,029	0	7.89
Tustin	6,123	0	4,717	0	2,190	0	0	0	13,030	0	9.67
Westminster	2,748	16,566	8,215	0	890	0	0	0	11,853	16,566	22.47
Yorba Linda	11,792	0	12,683	0	4,341	5,835	0	0	28,816	5,835	24.48
<b>MWDOC Totals</b>	<b>132,820</b>	<b>18,033</b>	<b>181,848</b>	<b>89,642</b>	<b>97,806</b>	<b>8,624</b>	<b>20,184</b>	<b>0</b>	<b>432,658</b>	<b>116,299</b>	<b>384.83</b>

Anaheim	4,535	0	7,735	20,093	13,555	65,300	4,122	0	29,947	85,393	69.18
Fullerton	4,865	876	5,727	0	6,223	0	105	0	16,920	876	12.36
Santa Ana	0	0	2,820	0	525	0	0	0	3,345	0	2.27
<b>Non-MWDOC Totals</b>	<b>9,400</b>	<b>876</b>	<b>16,282</b>	<b>20,093</b>	<b>20,303</b>	<b>65,300</b>	<b>4,227</b>	<b>0</b>	<b>50,212</b>	<b>86,269</b>	<b>83.81</b>

<b>Orange County Totals</b>	<b>142,220</b>	<b>18,909</b>	<b>198,130</b>	<b>109,735</b>	<b>118,109</b>	<b>73,924</b>	<b>24,411</b>	<b>0</b>	<b>482,870</b>	<b>202,568</b>	<b>468.63</b>
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[1] Installed device numbers are calculated in square feet

**ULF TOILETS INSTALLED BY AGENCY**  
through MWDOC and Local Agency Conservation Programs

Agency	Previous Years	FY 95-96	FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	Total	Cumulative Water Savings across all Fiscal Years
Brea	378	189	299	299	122	144	867	585	341	401	26	48	17	4	0	3,720	1,692.64
Buena Park	361	147	331	802	520	469	524	1,229	2,325	1,522	50	40	18	9	0	8,347	3,498.37
East Orange CWD RZ	2	0	33	63	15	17	15	50	41	44	19	18	13	2	0	332	138.23
El Toro WD	1,169	511	678	889	711	171	310	564	472	324	176	205	61	40	0	6,281	3,091.16
Fountain Valley	638	454	635	858	1,289	2,355	1,697	1,406	1,400	802	176	111	58	32	0	11,911	5,383.10
Garden Grove	1,563	1,871	1,956	2,620	2,801	3,556	2,423	3,855	3,148	2,117	176	106	67	39	0	26,298	12,155.41
Golden State WC	3,535	1,396	3,141	1,113	3,024	2,957	1,379	2,143	3,222	1,870	167	116	501	43	0	24,607	11,731.47
Huntington Beach	3,963	1,779	2,600	2,522	2,319	3,492	3,281	2,698	3,752	1,901	367	308	143	121	0	29,246	13,854.70
Irvine Ranch WD	4,016	841	1,674	1,726	1,089	3,256	1,534	1,902	2,263	6,741	593	626	310	129	0	26,700	11,849.23
La Jolla Beach CWD	283	93	118	74	149	306	220	85	271	118	32	26	29	6	0	1,810	845.69
La Habra	594	146	254	775	703	105	582	645	1,697	1,225	12	31	6	7	0	6,782	2,957.73
La Palma	65	180	222	125	44	132	518	173	343	193	31	27	20	17	0	2,090	927.52
Mesa Water	1,610	851	1,052	2,046	2,114	1,956	1,393	1,505	2,387	988	192	124	56	14	0	16,288	7,654.27
Moulton Niguel WD	744	309	761	698	523	475	716	891	728	684	410	381	187	100	0	7,607	3,371.14
Newport Beach	369	293	390	571	912	1,223	438	463	396	1,883	153	76	36	16	0	7,219	3,166.77
Orange	683	1,252	1,155	1,355	533	2,263	1,778	2,444	2,682	1,899	193	218	88	53	4	16,600	7,347.93
San Juan Capistrano	1,234	284	193	168	323	1,319	347	152	201	151	85	125	42	39	0	4,663	2,324.42
San Clemente	225	113	191	65	158	198	667	483	201	547	91	66	37	34	0	3,076	1,314.64
Santa Margarita WD	577	324	553	843	345	456	1,258	790	664	260	179	143	101	29	0	6,522	3,001.01
Seal Beach	74	66	312	609	47	155	132	81	134	729	29	10	6	12	0	2,396	1,073.80
Serrano WD	81	56	68	41	19	52	95	73	123	98	20	15	14	2	0	757	338.66
South Coast WD	110	176	177	114	182	181	133	358	191	469	88	72	32	22	0	2,305	990.05
Trabuco Canyon WD	10	78	42	42	25	21	40	181	102	30	17	20	12	14	0	634	273.02
Tustin	988	668	557	824	429	1,292	1,508	1,206	1,096	827	69	89	26	12	0	9,571	4,423.88
Westminster	747	493	969	1,066	2,336	2,291	2,304	1,523	2,492	1,118	145	105	70	24	0	15,683	7,064.28
Yorba Linda WD	257	309	417	457	404	1,400	759	1,690	1,155	627	158	136	81	41	0	7,891	3,409.49
<b>MWDOC Totals</b>	<b>24,256</b>	<b>12,879</b>	<b>18,778</b>	<b>20,765</b>	<b>21,136</b>	<b>30,242</b>	<b>24,918</b>	<b>27,175</b>	<b>31,827</b>	<b>27,568</b>	<b>3,654</b>	<b>3,242</b>	<b>2,031</b>	<b>861</b>	<b>4</b>	<b>249,336</b>	<b>113,878.61</b>

Anaheim	447	1,054	1,788	3,661	1,755	7,551	4,593	6,346	9,707	5,075	473	371	462	341	1	43,625	18,359.52
Fullerton	1,453	1,143	694	1,193	1,364	2,138	1,926	2,130	2,213	1,749	172	77	44	23	2	16,321	7,435.23
Santa Ana	1,111	1,964	1,205	2,729	2,088	8,788	5,614	10,822	10,716	9,164	279	134	25	5	0	54,644	22,887.95
<b>Non-MWDOC Totals</b>	<b>3,011</b>	<b>4,161</b>	<b>3,687</b>	<b>7,583</b>	<b>5,207</b>	<b>18,477</b>	<b>12,133</b>	<b>19,298</b>	<b>22,636</b>	<b>15,988</b>	<b>924</b>	<b>582</b>	<b>531</b>	<b>369</b>	<b>3</b>	<b>114,590</b>	<b>48,682.70</b>

<b>Orange County Totals</b>	<b>27,267</b>	<b>17,040</b>	<b>22,465</b>	<b>28,348</b>	<b>26,343</b>	<b>48,719</b>	<b>37,051</b>	<b>46,473</b>	<b>54,463</b>	<b>43,556</b>	<b>4,578</b>	<b>3,824</b>	<b>2,562</b>	<b>1,230</b>	<b>7</b>	<b>363,926</b>	<b>162,561.30</b>
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