



Updated

Proposed Poseidon Desalination Project Distribution Facility Options Workshop

Board of Directors

March 2, 2016



Background

- Presented conceptual distribution options with the Board on February 3, 2016
- Eight options discussed
- Three eliminated
- Staff has provided “pros” and “cons” of the remaining five options



Poseidon Distribution Options

Option	Description	Capital Cost
1A	26 New Injection Wells, Talbert Barrier, and necessary pipelines	\$305 M
1B	16 New Injection Wells, Talbert Barrier, and new pipe to Kraemer	\$316 M
1C	Zero New Injection Wells, Talbert Barrier, and new pipe to Recharge Basin	\$325 M
1D*	Four New Injection Wells, Talbert Barrier, Burriss Booster PS, Burriss Outlet, and necessary pipelines	\$160 M
2A*	Zero New Injection Wells, Talbert Barrier, Burriss Booster PS, Burriss Outlet, and pipelines/turnouts to sell directly to NB & HB	\$131 M
2B	Zero New Injection Wells, Talbert Barrier, and pipelines/turnouts to sell directly to NB, HB, SB, FV, GG, GSW	\$97 M
3	Zero New Injection Wells, Talbert Barrier, and pipelines/turnouts to sell directly to NB, HB, SB, FV, GG, GSW, and South County Agencies	\$161 M
4	All water distributed to Producers (no recharge)	\$107 M

*Adds additional costs to GWRS Final Expansion Project

Desal Option 1D



Facility	Flow (MGD)	Capital Cost (\$M)
Burris Booster Pump Station*	15	\$25
Burris Basin Outlet*	12	\$1
Centennial Park Inj. Wells*	6.5	\$25
MBI Inj. Well*	1.5	-
Talbert Seawater Barrier	15	-
Desal Dist. Pipeline	-	\$41
Desal Dist. Booster PS	-	\$6
GWRS IE – SAR Inj Wells	-	\$24
GWRS IE – ARTIC Inj Well	-	\$6
Contingency (30%)	-	\$32
TOTAL	50	\$160

*Projects Planned for GWRS Final Expansion



Desal Option 1D

(Recharge 50 mgd into GW Basin)

Pros

- Institutionally simplest option to implement – OCWD is the only customer
- Option is tied to OCWD's management of the groundwater basin – recharging the GW Basin
- Raises BPP for all Producers



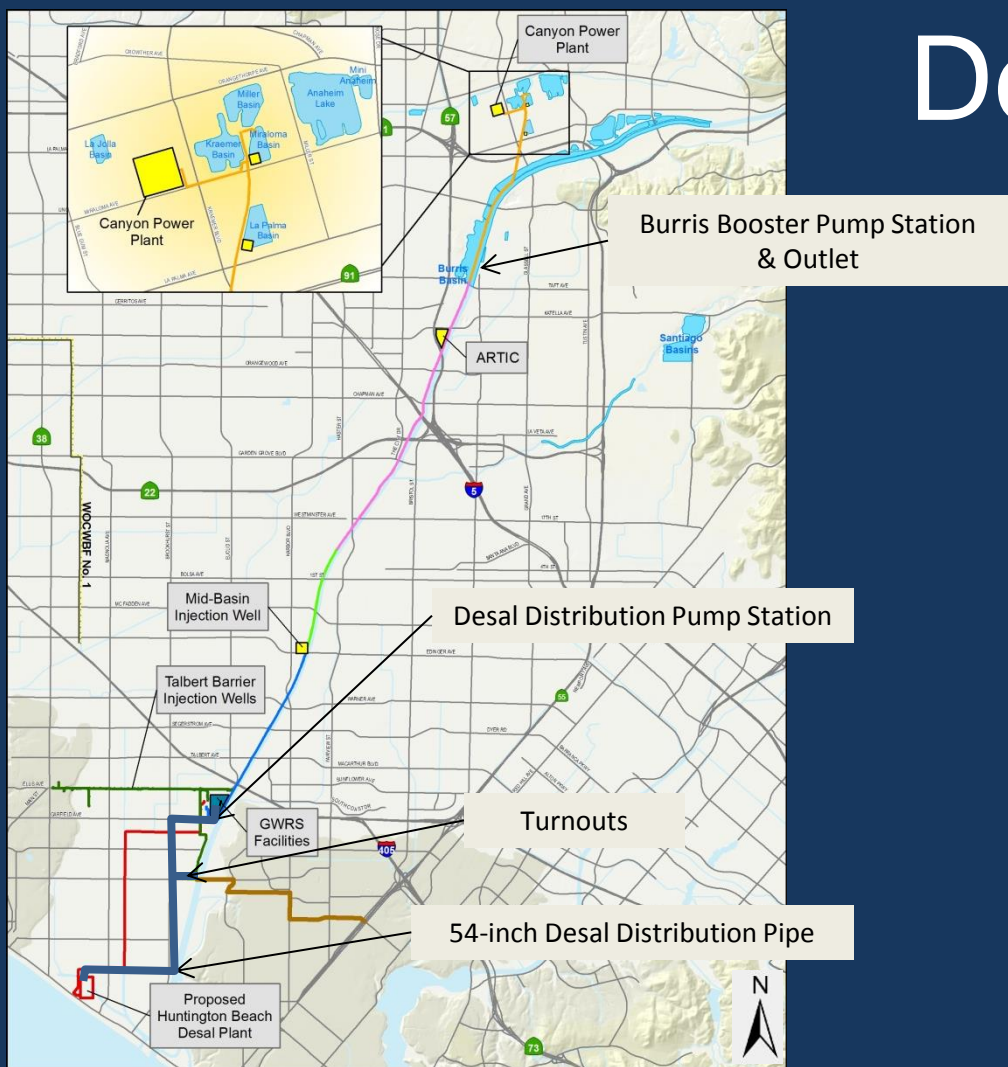
Desal Option 1D

(Recharge 50 mgd into GW Basin)

Cons

- Increases GWRS Final Expansion Project costs by \$200 million - Possible OCSD concern
- Desal water will displace ~ 3,000 afy of SAR storm water in Burris Basin
- Nine injection wells need to be built (four currently in design)
- GWRS Pipeline & Talbert Barrier need to operate 24/7/365 (down time exposure)
- Need OCSD property for new pump station
- Adds \$80/af to cost of project – pumping water out of ground

Desal Option 2A



Facility	Flow (MGD)	Capital Cost (\$M)
Burris Booster Pump Station*	15	\$25
Burris Basin Outlet*	12	\$1
Talbert Seawater Barrier	15	-
Desal Dist. Pipeline	-	\$41
Desal Dist. Booster PS	-	\$6
Turnouts & Pipeline for NB & HB	8	\$3
GWRs IE – Centennial Park Inj Wells	-	\$25
Contingency (30%)	-	\$30
TOTAL	50	\$131

*Projects Planned for GWRs Final Expansion



Desal Option 2A

(Recharge 42 mgd, Sell 8 mgd to HB and NB)

Pros

- Institutionally simpler option to implement – OCWD is the primary customer (other than Huntington Beach and Newport Beach)
- Option is primarily tied to OCWD's management of the groundwater basin – recharging the GW Basin
- Raises BPP for all Producers
- Putting slightly less water into GW Basin (less infrastructure / injection wells needed)
- Only required injection wells are currently in design phase: Centennial Park Injection wells



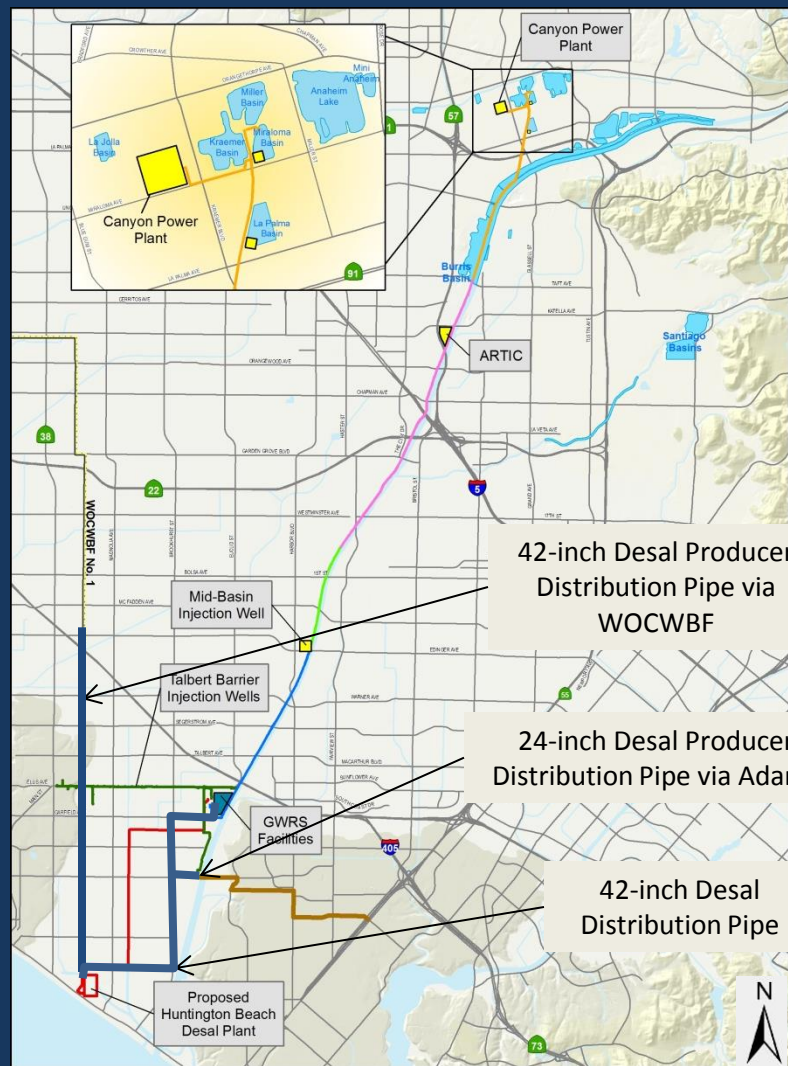
Desal Option 2A

(Recharge 42 mgd, Sell 8 mgd to HB and NB)

Cons

- Increases GWRS Final Expansion Project costs by \$200 million - Possible OCSD concern
- Desal water will displace ~ 3,000 afy of SAR storm water in Burriss Basin
- GWRS Pipeline & Talbert Barrier need to operate 24/7/365 (down time exposure)
- Need OCSD property for new pump station
- Adds \$80/af to cost of project – pumping water out of ground
- Need to establish agreement with Producers (NB & HB) for direct sale
- Potential agreement with MWDOC for direct sale

Desal Option 2B



Facility	Flow (MGD)	Capital Cost (\$M)
Burriss Outlet	-	\$1
Desal Producer Dist. Pipeline and WOCWBF Turnouts	27	\$40
Desal Distr. Pipeline and Adams Turnouts	8	\$2
Talbert Seawater Barrier	15	-
Desal Distr. Pipe	-	\$33
Contingency (30%)	-	\$21
TOTAL	50	\$97



Desal Option 2B

(Recharge 15 mgd, Sell 35 mgd to Various Producers)

Pros

- Majority of desal water sold directly to Producers (less infrastructure needed)
- No new injection wells required
- GWRS Final Expansion costs to remain unchanged
- Least costly option



Desal Option 2B

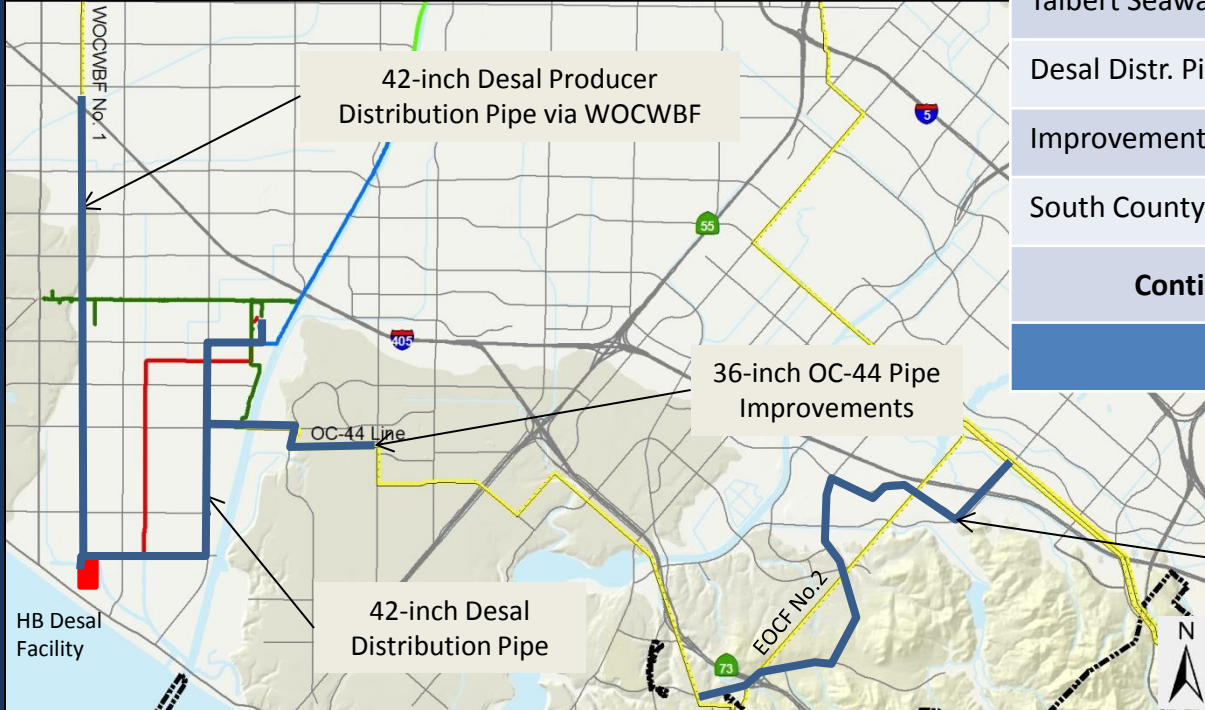
(Recharge 15 mgd, Sell 35 mgd to Various Producers)

Cons

- Talbert Barrier operates 24/7/365 (down time exposure)
- Adds \$80/af to cost of project – pumping water out of ground
- Need to establish agreement with Producers for direct sale
- Potential agreement with MWD OC for direct sale
- Need West Orange County Water Board (WOCWB) approval
- Need agreement with Mesa Water and Huntington Beach to use OC44 pipeline.



Desal Option 3



Facility	Flow (MGD)	Capital Cost (\$M)
Burriss Outlet	-	\$1
Desal Producer Dist. Pipeline and WOCWBF Turnouts	25	\$40
Talbert Seawater Barrier	15	-
Desal Distr. Pipeline	-	\$33
Improvements to OC-44	-	\$12
South County Desal Pipeline	10	\$39
Contingency (30%)	-	\$36
TOTAL	50	\$161



Desal Option 3

(Recharge 15 mgd, Sell 25 mgd to Various Producers & 10 mgd to SOC agencies)

Pros

- Majority of desal water sold directly to Producers (less infrastructure needed)
- No injection wells required
- GWRS Final Expansion costs to remain unchanged
- Can sell water at higher rate to South Orange County agencies



Desal Option 3

(Recharge 15 mgd, Sell 25 mgd to Various Producers & 10 mgd to SOC agencies)

Cons

- Talbert Barrier operates 24/7/365 (down time exposure)
- Adds \$80/af to cost of project – pumping water out of ground
- Need to establish agreement with Producers for direct sale
- Need WOCWB approval
- Potential agreement with MWDOC for direct sale
- MWDOC/OCWD to sell water to agencies outside of OCWD service area

Desal Option 4



48-inch Desal Producer Distribution Pipe via WOCWBF

36-inch OC-44 Pipe Improvements

42-inch Desal Distribution Pipe

Facility	Flow (MGD)	Capital Cost (\$M)
Desal Producer Dist. Pipeline and WOCWBF Turnouts	29	\$44
Desal Distr. Pipeline	-	\$27
Improvements to OC-44 w/Turnouts	21	\$12
Contingency (30%)	-	\$24
TOTAL	50	\$107



Desal Option 4

(Directly distribute 50 mgd to various Producers and SOC agencies)

Pros

- No new injection wells required
- GWRS Final Expansion costs to remain unchanged
- All desal water sold directly to Producers (less infrastructure needed)
- No storm water lost due to desal water



Desal Option 4

(Directly distribute 50 mgd to various Producers and SOC agencies)

Cons

- Need to establish agreement with Producers for direct sale
- Need WOCWB approval
- Potential agreement with MWDOC for direct sale
- MWDOC/OCWD to sell water to agencies outside of OCWD service area
- Assumes using existing MWD East Orange County Feeder No. 2
 - Potential water quality issue with MWD



Summary of Distribution Options

Option #	OCWD Recharges All Poseidon Water				Combination			Original
	1A	1B	1C	1D	2A	2B	3	4
	New Recharge			GWRSE		WOCWB		
Capital Cost	\$305 M	\$316 M	\$325 M	\$160 M	\$131 M	\$97 M	\$161 M	\$107 M
Annual O&M	\$5 M	\$5 M	\$4 M	\$2.7M	\$3 M	\$2.5 M	\$2.5 M	\$2.5 M
Project Dist. Unit Cost	\$469/af	\$482/af	\$475/af	\$247/af	\$217/af	\$166/af	\$245/af	\$179/af
RA Increase	\$248/af	\$252/af	\$253/af	\$191/af	\$171/af	\$110/af	\$135/af	\$85/af
BPP Increase	12%	12%	12%	12%	10%	4%	4%	N/A
Producers Water Cost Increase	\$141/af	\$144/af	\$145/af	\$91/af	\$82/af	\$64/af	\$83/af	\$64/af
Monthly Water Bill	\$6.30	\$6.50	\$6.50	\$4.00	\$3.70	\$3.00	\$3.70	\$3.00



Receiving Outside Grant Funding

- Every \$10 million in grant funding received lowers the estimated project unit cost by ~ \$12/af



Financial Impact of Reducing Project Contingency Cost from 30% to 20%

Option #	Reduction In Estimated Project Capital cost	Reduction in Estimated Project Unit Cost
1D	\$12 million	\$15/af
2A	\$10 million	\$12/af

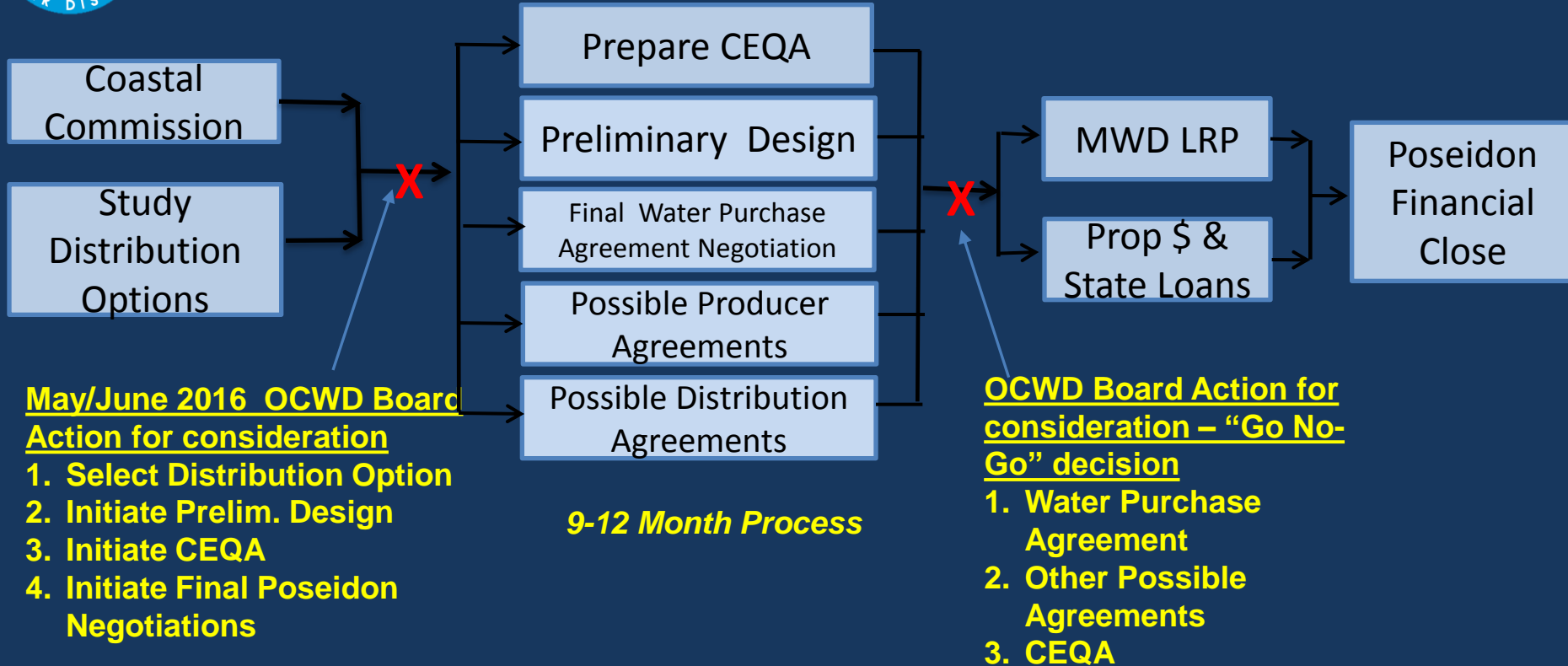


Financial Impact From Obtaining Lower Cost Financing

- Current distribution unit cost estimates assume 5% financing rate paid over 30 years
- If assume \$50 million of low interest loans and/or variable rate financing obtained at 2% rate - reduces estimated project unit cost by \$19/af



Poseidon Schedule Overview





Recommendation

- Eliminate Options 1D & 4; and
- Continue analyzing Options 2A, 2B, and 3



End of Presentation