[SCDA_213]

BDCP vs. local water supply alternatives: Dr. David Sunding reviews the alternative supply analysis for Metropolitan's Bay-Delta committee

July 28, 2014 Maven Meetings

At the July 22nd Metropolitan Water District meeting of the Special Committee on the Bay-Delta, Dr. David Sunding of the Brattle Group gave a presentation detailing how much it would cost to implement local water supply projects rather than the Bay Delta Conservation Plan (BDCP). He began by saying that today's presentation would be a complement to some of the other economic analyses that have been done. "*This is a somewhat different take, but I think it's a timely one because it responds to some issues that have been in the media recently*," he said.

"*There's been a lot of attention paid to the trade-off between BDCP and investments in local water supplies, and if I could characterize the argument, it's something to the effect of, well couldn't we reduce reliance on imported water supplies, including water supplies from the Delta, and at the same time increase reliance on local water supply alternatives like recycling, desalination, groundwater recovery, stormwater, on and on?*" Dr. Sunding said. "*And so that's the specific question that I'd like to focus on here. What are the economics of BDCP in relation to local water supply investments*."

He then started with some numbers. He noted that the BDCP has a range of potential yields for the state and federal projects combined of 4.7MAF with the high outflow scenario to 5.6 MAF with the low outflow scenario. In both cases, the proposed action has a 9,000 cfs diversion with a dual tunnel conveyance system, he said.

"*So then to understand the benefits and the costs of anything, you need to compare two states of the world: what would happen with the proposed action, and then what would happen without it*," Dr. Sunding said. They did modeling to develop a no BDCP case with a low outflow and high outflow scenario relying on existing conveyance, and determined the range of yields for a no BDCP case would be between 3.5 and 3.9 MAF.

"Depending upon the number of years you use to construct an average, mean deliveries out of the Delta have been 5 to 5.2 MAF, depending on how far back you go," said Dr. Sunding. "*So the BDCP roughly preserves the current level of deliveries. And by current, I mean over the last 10 or 20 years, plus or minus 10%. The effect of not doing the BDCP is to suffer an erosion in deliveries from the Delta down to this 3.5 to 3.9 MAF, so the BDCP is really primarily about preservation as opposed to new water supplies above and beyond where we've been the last 10 or 20 years*."

"*The split between the state and federal projects, for a number of reasons, changes between these high outflow and low outflow cases anywhere from 54% to 59%, so somewhere in a 55% to 60% range is the state project*," he said. "*If we look at this on an incremental basis, so what's the extra amount of water that's preserved as a result of BDCP, it's between 1.3 MAF and 1.7 MAF, and that you get just by looking at the difference between mean yields, with and without BDCP, and then for the low and high outflow cases*."

"*So to do just some very simple math, if you take a present value cost of $13.4B and that's the present value of the incremental cost of the BDCP … $13.4B divided by 1.7 million is around $300; $13.4B divided by 1.3 million is around $400, so the incremental cost of water preserved by BDCP is between $300 – $400 per acre-foot at the Delta. And again, that's just simple algebra*."

In comparing the costs of preserving water through BDCP with the backfilling through water supply alternatives, prices have to be defined at a particular location and of a particular quantity, so water preserved at the Delta is not equivalent to new water created in Southern California, he said. "*You have to add a conveyance charge to get it to Southern California, and then a treatment charge. So the $300-$400 at the Delta becomes something larger than that, depending where in the state you happen to be looking. Conveyance is more expensive to Southern California, so the cost in Southern California would be larger than it would be at Kern*."

Getting back to the question of what is the BDCP worth, what is the amount of money that agencies should pay to invest in the BDCP, he said. "*You can think about the water supply benefit is this 1.3 to 1.7 MAF that's preserved, so what's it worth to preserve that,"* he said. *"There are a couple of different ways you can value it. If you have a gap between supply and demand, you have to fill that gap just*

by mass balance, and there are a couple of ways you could do it. You could do demand reduction or you can increase supply, and the value of BDCP depends on what strategy is used to fill that gap at the local level."

In the benchmark analysis that's in chapter 9 of the BDCP, we focused on reductions in demand, he said. "*That wasn't an assumption; that was a result of the analysis*," he said. "*What we tried to do is figure out the least cost way to fill in that supply-demand gap, and it turned out for most urban areas in the state, a conservation-heavy strategy seemed to make the most sense. That approach is conservative, and we did that on purpose. It's conservative because it minimizes the benefits of BDCP.*"

"*What I'm going to talk about today is another approach that would be achieving the same level of reliability with BDCP, but doing it through investment in local supply alternatives and what would that mean in terms of cost*," he said.

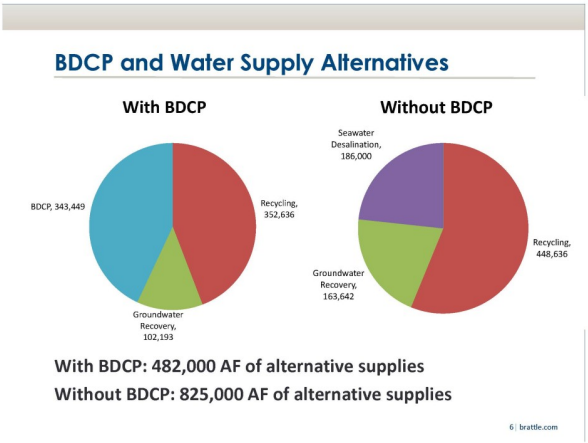
"*Urban water demands in California, looking at Met and beyond, are projected to grow about 20% by 2050, and that's including demand reductions from conservation programs*," he said. "*Again BDCP roughly maintains the level of state project and CVP deliveries, so with respect to the question of alternatives, we recognize that even if the BDCP is implemented, there's going to be a huge need to invest in local water supply alternatives. This is not an either-or proposition; it's an 'and' proposition. The only thing we're talking about here is what the right mix is.*"

Dr. Sunding said there isn't a master list of water supply projects available in Southern California, but the closest thing he's ever found was the results of Metropolitan's 2010 Integrated Resource Plan (IRP) which had a comprehensive list of a number of different water supply alternative projects. "*Some were in advance planning and some were more conceptual, but I think it's a good fair representation of the range of alternatives that's*

available," he said.

"*So with BDCP, according to the core resource strategy, Southern California would need to invest in just a little bit under 500,000 AF of alternative water supplies to meet that growing demand*," said Dr. Sunding. "*That would be the with-BDCP case – BDCP plus almost a half a million acre-feet of local alternative investment, which is a lot.*"

"If we wanted to maintain the same level of reliability by increasing our local supplies, then there would have to be more like 825,000 acre-feet of local supply investments," he said. "*So the question I'm asking here is what is the cost of doing that, forgetting about technical or regulatory feasibility. Let's just assume all of this stuff could get done and look purely at the cost.*"



"*Here's one way of thinking about it*," he said, presenting a slide with two pie charts on it. "*The pie chart on the left is looking just at Southern California, the blue is BDCP, and the core resource strategy calls for just over 350,000 acre-feet of recycling to be done, and then about 102,000 AF of groundwater recovery. Remember, the core resources strategy assumes the Delta is stabilized and investments are made there to maintain levels of exports.*"

"*What would happen without BDCP? Basically what happens is you've got to go further and further down the list of available alternatives, and now you get into some projects that are not just expensive, but they are more*

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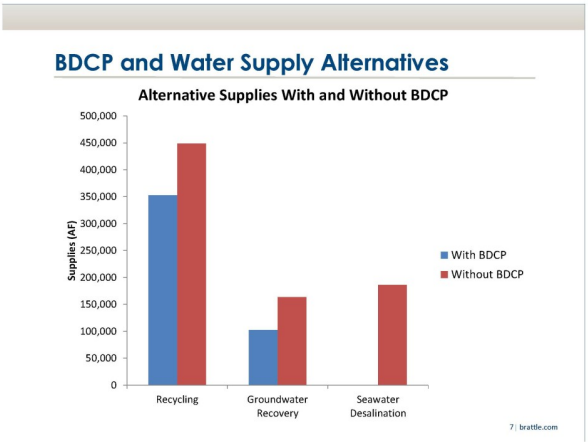
speculative," he said. "*Without BDCP, there would be about 450,000 AF of recycling, about 163,000 AF of groundwater recovery, and then the big change is 186,000 AF of seawater desalination, and that does not include Carlsbad, by the way. Carlsbad is already factored in.*"

"*So that's a vision of what the future could look like, without BDCP*," he said. "*If one wanted to invest in local alternatives that would achieve the same level of reliability, what would that mean in terms of cost?*"



Dr. Sunding said they looked at the costs of a number of recycling, seawater desal and groundwater desal across the state. "*The real big unknown here is recycling, not that it's hard to figure out what recycling has already cost, but the cost of recycling is frankly all over the place*," he said. He noted that when they looked at the costs of recycling projects, they removed subsidies, because there's no guarantee that subsidies are going to be available in the future, and also because somebody has to pay for those subsidies, usually the ratepayers, ultimately, so from an aggregate point of view, it should be taken out.

"*A number of recycling projects are very small. I think half of the recycling projects in Southern California are less than 20 MGD*," he said. "*But there are some that are large. Costs again are all over the place, from $850 to $8200*." He acknowledged the $8200 is not representative but just one particular project in the Bay Area.

"*Seawater desal costs are a little bit more knowable, and*

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UPCOMING

Our delta Congressmen, McNerney and Garmendi have a bill in Congress to extend the subsidies long term. We think we can get Feinstein on board and it will have a chance. Nobody knows what Trump will do. Maybe we will name it the Donald J. Trump world champion water recycler and he will sign.

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could be biggest
step forward for
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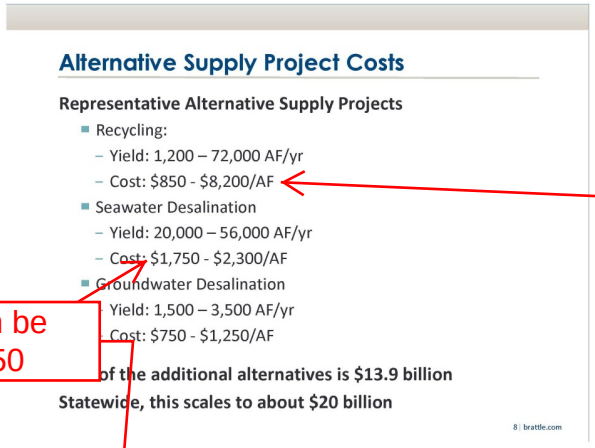
Carlsbad gives us a good benchmark there," he said. "*Groundwater desalination tends to be somewhat smaller projects, and those actually look fairly competitive with prices in the $750 to $1250 per acre-foot.*"



"*So we took the list of projects that I just showed you and applied representative costs to them*," he said. "*For seawater desal, we used $2250, for recycling we used $1300, which I think is a very fair price, and we used a lower price than that for groundwater desal. We took into the account that all of these things wouldn't have to be built now; they would be built out over the coming decades, so that lowers the present value costs, but just multiplying one thing by another here, and adding up down the list of projects in your core resource strategy, the costs of the extra projects that would have to get built if BDCP is not implemented is $13.9 billion, and that's just for Southern California.*"

"*I'm assuming that all of that is technically feasible*," he said. "*We're just looking at the cost here. If you scale that up to all of the urban agencies, including Santa Clara, Central Coast, Castaic, and the like, all of the urban agencies that are part of the BDCP, then the cost is more like $20 billion. Again, assuming all of this is feasible.*"

"*So on an incremental treated and delivered basis, the water that's preserved by BDCP has a cost delivered and treated in Southern California of about $800-$900, and again that's on an incremental basis, not a finance basis,*

Why $1300 when it can be done for $850?

Why? If it can be done for $1750

if accurate that is less than capital cost of BDCP

Still capital cost about the same as BDCP

So, if I understand him correctly, conveyance + treatment =$400–$600. "Treatment" is included in the cost for producing local supplies, i.e., desalination is "treatment" there is no further treatment after the desal process.

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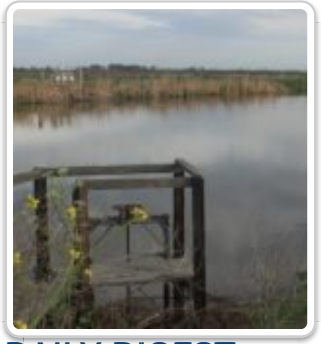

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but an incremental basis," he said. "*On a full cost basis, once you remove subsidies, there are very few water supply alternatives available any more that can match that price*."

"*So, from an economic point of view, not doing the BDCP because you want to ramp up investment in local alternatives would appear to be an expensive proposition*," he said.

"*I want to emphasize again, and I say this every chance I get, the choice is not BDCP or alternatives*," added Dr. Sunding. "*Even if the BDCP is implemented, it is not going to solve California's water problems. It prevents things from getting worse. There's still going to be a big need to invest in water supply alternatives*."

"*Very last point, and I would lose my license to practice economics if I didn't say this*," said Dr. Sunding. "*The BDCP has been subjected to extensive cost benefit analyses and there's more to come. As the plan gets more refined and there is more information available about cost allocations and specific financing obligations, there's going to be even more of this work that needs to be done. So the BDCP has subjected to very rigorous economic analysis. Ratepayers benefit, if I could say so, when all projects, all local alternatives are subjected to that standard of economic analysis. … Let me put it this way. If cost benefit principles are equally applied to all water supply alternatives as I think they should be, there's very little reason to think that the BDCP is going to crowd out or be crowded out by local supply alternatives. They tend to be more expensive. So to maintain an equivalent degree of reliability, the BDCP appears to be what I would characterize as a foundational investment, something to build on top of, but it's not something that economically can be easily displaced by local alternatives*."

"*So I'll leave it there … "*

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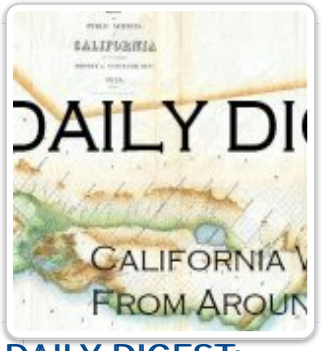

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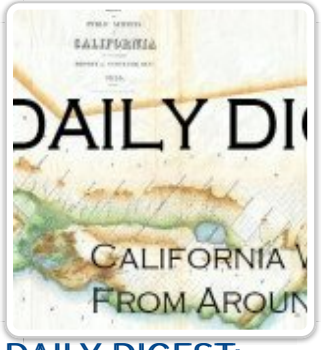

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Discussion highlights

"*I know have the statistic that if we didn't have the State Water Project, and we wanted to replace that with ocean desal, we'd have a desal plant every 20 miles along the coast … ?*" said Director Evans.

"*Every 4 miles along the coast,*" clarified General Manager Jeffrey Kightlinger.

"*So if you have desal for 186,000 AF, what's the footprint needed to have the plants that would produce that?*" asked Director Evans.

"*This is not replacing the entire State Water Project with desalination,*" responded Mr. Kightlinger. "*This is for an increment of lost supply. So, if you look at very large desal plants such as what you're seeing in parts of Israel, or Carlsbad, roughly 50,000 acre-feet, it's four pretty large size, among the largest built in the world, desal plants. And we've seen the track record of how fast those get permitted.*"

Director Rich Atwater gave some details about stormwater. "*Regionally, most of the stormwater capture is on the Santa Ana-San Gabriel River, and it has a long history, and in anything less than average or below, we capture 100% of the stormwater now, so it's only in the really big wet years that we can capture. The total costs to comply with MS-4 permit in Southern California is an extraordinary number. … To make it simple, it's about $3B costs to develop another 200,000 acre-feet of capture in the region; but for MS-4 compliance in the region, it's $25B. Groundwater treatment is in the order of $2B – $3B. Simply put, my sound byte is the cost of stormwater compliance in the region is dramatically more expensive; if Met's share is $4 or $5 billion in capital costs, stormwater is in the range of $25-plus billion over the next period of time. It's extraordinary. Not to say that we all need not to do that. … I will remind everybody, what's the biggest*

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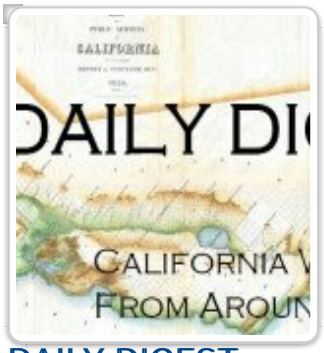

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challenge with stormwater? Prop 218 and Prop 26. It's impossible to raise fees to pay for it."

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4 comments Bay Delta Conservation Plan, Delta tunnels, economic analysis, Metropolitan Water District

4 comments

dzetland
July 28, 2014 at 7:38 am

(1) Sunding's choice to ignore demand reductions may match Met thinking, but it "allows" for demand that spills 40-70% of residential water on lawns.

(2) I doubt Met will pay its "fair share" of BDCP, as farmers surely will not. That will double or triple Met

costs/acre-foot.

Reply

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Chris Gulick

July 28, 2014 at 8:30 am

"Last week, BDCP released what it describes as "cost and yield information," although I didn't see any new information in the glossy newsletter summary with the pretty bird. The newsletter makes 2 main claims: 1) BDCP provides reliable water for $5 per month, and 2) BDCP is cheaper than the alternatives.

Both of these claims are deceptive and are based on invalid comparisons and inaccurate assumptions."

http://valleyecon.blogspot.com/2014/06/bdcp-cost-and-yield-deception.html

Dr. David Sunding of the Brattle Group has yet to refute this and just fed more of the same to a captive audience at MWD.

B.S. propaganda is alive and well.

Reply

Terry Spragg

July 28, 2014 at 1:57 pm

The capital and operating costs to use waterbag technology to deliver 500,000 acre feet of water per year from the Olympic Peninsula in Washington State to California are available for review in economic and engineering reports completed by CH2M-Hill, and should be included in all future debates on the economics of developing new water supplies for California. The economics to use waterbag technology to deliver water to Southern California from Washington State are estimated to be between

$800 and $1,000 per acre foot. Contrary to what MET has stated, a complete technical and economic analysis of waterbag technology has never been completed by MET, not to mention the significant environmental advantages of waterbag technology compared to the alternatives. This plan will also drought-proof the Puget Sound region in Washington State at no cost to Washington State taxpayers, and has received a favorable open-minded response from several water leaders in Washington State. Why isn't MET studying this water transport alternative and making a preliminary contact with Washington State officials? MET's response is that not enough water would be available from a waterbag delivery system. This is incorrect. The CH2M-Hill report documents how over 500,000 acre feet of water per year can be delivered from the Olympic Peninsula to California just by adding more waterbags to the trains, and more trains to the system. California taxpayers should ask MET and DWR officials to cooperate in a thorough and transparent study on the economics, technology and politics need for transporting large volumes of water from Washington State to California. See: http://www.youtube.com/watch?v=4TEJp6UZaDI for a video of waterbag technology being demonstrated in Washington State. More information can be found in a Wikipedia article at: http://www.en/wikipedia.org/wiki/Flexible_barge, and at the website: http://www.waterbag.com.

Reply

michael perrone

July 28, 2014 at 3:47 pm

Dr Sunding's "very simple math" near the start of the presentation confused me. He says that $13.4 billion divided by 1.7 million is about $300/acre-foot; and that $13.4 billion divided by 1.3 million is about $400/acre-foot. My rough computation is that the

first number is almost $800/acre-foot, and the second number exceeds $1000/acre-foot. what am I missing?

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MAVEN'S NOTEBOOK

The diary of a confessed obsessive-compulsive California water news junkie

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