DESALINATION IN AUSTRALIA

San Diego County Water Authority

Water Planning Committee

October 11, 2012

Gary J. Crisp
Global Business Leader – Desalination: GHD
BSc. Civil Engineering, C Eng., MICE, CP Eng., FIE Aust., PMP
SDCWA Board Presentation - Overview

• Introduction
• The Big Six
• Perth Seawater Desalination Plant (PSDP)
• Comparison Between Sydney, Perth and San Diego
• The Importance of Desalination in Perth and Western Australia
The Big 6
Australia’s six big desalination plants
**Australian Rainfall and Desalination**

- **Gold Coast Desal Plant** (operating)
- **Sydney Desal Plant** (operating)
- **Perth 1 Desal Plant** (operating)
- **Perth 2 A & B Desal Plant** (2B under construction)
- **Victorian Desal Plant** (commissioning)
- **Adelaide Desal Plant** (commissioning)

*Average annual rainfall*
The Big Six – No. 1
Gold Coast Desalination Plant

• Located in Tugin
• 36 MGD Capacity: 38,000 AF/Y
• Total Capital Cost: $943 million
• Purpose: Supplement surface supply in dry years

• Commenced operation in Nov. ‘08
• Green Energy as offset
• Status: Hot Standby Mode; local reservoirs near capacity

Courtesy of SEQWater
Southeast Queensland Projected Water Sources 2020

- 10% desalination
- 72% surface water
- 4% groundwater
- 14% IPR (only if reservoir levels fall below 40%)
Climatic Impacts
Gold Coast Decision Point

Historic water levels in Lake Wivenhoe

Gold Coast Decision Point


Courtesy of the Water Corporation
The Big Six – No. 2
Sydney Desalination Plant

- Located in Kurnell
- 66 MGD Capacity: 77,000 AF/Y
- Total Capital Cost: $1.44 billion
- Purpose: Supplement surface supply in dry years
- Commenced operation in Nov. ‘10
- Wind Power is used as offset
- Status: Hot Standby Mode: Local reservoirs near capacity

Courtesy of Sydney Water
The Big Six – No. 2

Sydney Projected Water Sources
2020

- 15% desalination
- 72% surface water
- 1% groundwater
- 10% Recycled
Climatic Impacts
Sydney Phase 1 Decision Point

Available water storage

Sydney Phase 1 Decision Point

Current available storage = 95.0%

San Diego County Water Authority

Courtesy of the Water Corporation
The Big Six – No. 3
Adelaide Desalination Plant

- Located in Port Stanvac
- 72 MGD Capacity: 70,000 AF/Y
- Total Capital Cost: $1.5 billion
- Purpose: Supplement surface supply in dry years
- To commence operation in Jan. ‘13
- Wind Power is used as offset
- Status: To be placed in Hot Standby Mode; reservoirs and river flows at high levels
The Big Six – No. 3

Adelaide Projected Water Sources 2020

- 49% desalination
- 23% Murray River surface water
- 18% surface water
- 1% Recycled
Climatic Impacts
Adelaide Phase 1 Decision Point

Adelaide Phase 1 Decision Point - lowest flow ever recorded

January 2007
The Big Six – No. 4
The Victorian Desalination Project

- Located in Wonthaggi
- 120 MGD Capacity: 130,000 AF/Y
- Total Capital Cost: $3.8 billion
- Supplement Surface Supply in dry years
- To commence operation in Dec. ‘12
- Wind Power as offset
- Status: Commissioning
Melbourne Projected Water Sources
2020

- 80% surface water
- 20% desalination
Climatic Impacts
Melbourne Desalination Decision Point - 2007

Melbourne
Decision Point 2007

1 Gigalitre (GL) = 1,000 Megalitres (ML)

Water System Storage
The Big Six – No. 5
Perth Seawater Desalination Plant

- Located in Kwinana
- 38 MGD Capacity: 40,000 AF/Y
- Total Capital Cost: $317 million
- Purpose: Base load core supply

- Commenced operation in Nov. ‘06
- Wind Power is used as offset
- Status: Operating beyond “name plate” capacity
The Big Six – No. 5

Perth Projected Water Sources 2020

- 45% desalination
- 21% surface water
- 18% groundwater
- 16% groundwater incorporating ASR
Impact of Drying Climate – Western Australia
Perth 1 Decision Point

Perth 1 A Decision Point

Notes: * year is taken as May to April and labelled year is start (winter) of year
** Inflow is simulated based on Perth dams in 2001 i.e. excluding Stirling, Samson & Wokalup

1GL = 810 Acre-Ft
2010 - 11.9 GL = 8640 Acre-Ft
Reduced Inflow to Dams (as at 1 Nov 06)

273,906 Acre-Ft
143,435 Acre-Ft
75,122 Acre-Ft
51,864 Acre-Ft

972 Acre-Ft

12th June 2012

Courtesy of the Water Corporation
The Big Six – No. 6
Southern Seawater Desalination Plant

- Located in Binningup
- 80 MGD Capacity: 85,000 AF/Y
- Total Capital Cost: $1.27 billion
- Purpose: Base load core supply
- Commenced operation in Sept. ‘11
- Wind / Solar/ Wave Power as energy offset
- Status: Phase 1: operating
  Phase 2: under construction

Courtesy of Water Corporation
Impact of Drying Climate – Western Australia
Perth 2A Decision Point

Perth 2A/2B Decision Points

Notes: * year is taken as May to April and labelled year is start (winter) of year
** Inflow is simulated based on Perth dams in 2001 i.e. excluding Stirling, Samson & Wokalup
Environmental Features of Perth 1

- 16 acres
- 6 acres
Environmental Features of Perth 1

Real Time Monitoring
Environmental and Sustainability Attributes

Gold Coast Desalination Plant Intake

Courtesy of WaterSecure
## Comparison Between Sydney, Perth and San Diego County

<table>
<thead>
<tr>
<th>City</th>
<th>Sydney</th>
<th>Perth</th>
<th>San Diego County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>4,500,000</td>
<td>1,800,000</td>
<td>3,200,000</td>
</tr>
<tr>
<td>Approximate Average Rainfall (Inches)</td>
<td>47</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Annual water use (Acre-Ft)</td>
<td>440,000</td>
<td>253,000</td>
<td>542,000</td>
</tr>
<tr>
<td>Gallons/ Capita/ Day</td>
<td>87</td>
<td>125</td>
<td>151</td>
</tr>
<tr>
<td>Residential Outdoor Water Use Percentage</td>
<td>27</td>
<td>49</td>
<td>60</td>
</tr>
<tr>
<td>Local reservoir storage capacity (Acre-ft)</td>
<td>2,092,260</td>
<td>487,337</td>
<td>562,000</td>
</tr>
<tr>
<td>Average Local Surface Use as a Percentage of Total Use</td>
<td>84</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Purpose for Seawater Desalination</td>
<td>Supplement</td>
<td>Base load (Core Supply)</td>
<td>Base Load (Core supply)</td>
</tr>
</tbody>
</table>
San Diego and Perth - Similarities

- Relatively Large West Coast Cities
- Extremely desirable places to live
- Mediterranean Climate
- Relatively low rainfall in reservoir catchments
- No large local surface reservoirs (Sydney, Melbourne, Brisbane, etc.)
“That’s why we built the first desalination plant and the second desalination plant and we are currently expanding that”
19 September 2012

Mr Gary Crisp  
Global Business Leader - Desalination  
GHD  
239 Adelaide Terrace  
PERTH WA 6000

Dear Gary

Seawater desalination on a large scale for public potable water supply has been successfully developed over the past nine years in the south western region of the state of Western Australia. This has experienced some of the most severe effects of climate change in the world.

While our total reliance on traditional sources, surface and shallow ground water, was under great threat from reduced rainfall, we turned to desalination as a new, major climate resilient factor in our water supply. We believe it has met with very good public acceptance.

We have constructed two reverse osmosis seawater desalination plants and are currently doubling the second plant's capacity. When this is completed in mid 2013 we will be producing about 156 gigalitres of desalinated potable water per year which will represent almost half of the total needs of our major integrated supply scheme centred on Perth which serves 1.7 million customers.

We are firmly committed to desalination which will remain a cornerstone of our water supply system for many years to come. It is an important part of our 50-year plan, Water Forever, which looks to source development, recycling, groundwater replenishment and water efficiency programs to achieve high levels of sustainability and resilience to expected ongoing reductions in rainfall.

We have also employed membrane technology for a major water recycling plant to deliver high quality process water to industry in Perth. Varying desalination processes are used for small to medium potable and industrial water supply schemes in some of our more remote regional areas and for a trial of groundwater replenishment in Perth. We are also considering further desalination plants for public water supply in future to regional coastal centres.

While desalination increases our production costs, the supply security it has brought to our customers and the avoidance of probably extreme and unacceptable restrictions on water use has made it more than worthwhile. It has been introduced at a time of continuing strong state growth which cannot be compromised by inadequate water supplies. These higher costs are to some extent being offset by reduced costs achieved by recycling and efficiency gains.

While desalination remains a high energy using process, improving technologies are reducing both energy use and operating costs. We have achieved a high level of environmental acceptability by purchasing all of the power requirements of our two Perth potable supply plants from renewable sources - wind and solar.

So far, these two plants have performed faultlessly, operating beyond nameplate design and have been in full year-round production. We believe we have made an excellent decision to go desalination which suits our needs perfectly.

Yours sincerely,

Sue Murphy  
CHIEF EXECUTIVE OFFICER
Evaluation of Rate Structure Alternatives for the Carlsbad Seawater Desalination Project

Special Board of Directors Meeting
October 11, 2012
Agenda

• History of the Water Authority’s rate structure
• Overview of process applied to the Desal project
• What is a Cost of Service (COS) Study
• Initial Rate Structure Alternatives
• Additional Rate Structure Alternatives
• Summary/Next Steps
History of Water Authority’s Rate Structure

• Prior to 1990
  ▪ Simple postage stamp rate was added to MWD’s costs

• 1990 – 2003
  ▪ Diversification of revenues
    • Property taxes, standby charges, capacity charges & the Infrastructure Access Charge (IAC)

• 2003 to present
  ▪ Water rates & charges diversified
    • Melded Supply, Melded Treatment & Transportation Rates
    • Storage & Customer Service Charges
Established Process for Designing the Rate Structure

- Current process mirrors past rate structure design efforts
  - Infrastructure Access Charge
  - Unbundling of rates
  - Capacity charges
- Utilized established process
  - Board policy set based upon staff analysis
    - Analysis includes close examination of costs & cost allocation
    - Iterative process with the Board
    - Policy & methodology framed out
  - Subsequent independent cost of service study conducted
    - Board policy is reviewed
    - Board policy is applied to the Water Authority’s costs
    - Final determination of rate & charges
Elements of Rate Structure Design

- Cost allocation to customer classes
  - Equitable
  - Clear nexus between cost of service & level of service/benefits received

- Board policy considerations
  - Rate structure objectives (fiscal sustainability)
    - Revenue volatility – Variable v. Fixed Revenue
    - Intergenerational equity – Growth pays for growth
    - Affordability – Cost of water to region
    - Beneficiary pays – No free ridership

- Other considerations
  - Legality
  - Perceived fairness and equity
  - Implementation feasibility
  - Customer acceptance
  - Coverage of bond covenants
What is a Cost of Service Study

- **Cost of service** is central to utility rate setting
- Regulators and the courts require rates to adhere to a cost-of-service justification:
  - Rates should be designed so users pay in water rates for the costs they impose on the water system
  - *Nexus between level of service and cost of service*
- Two kinds of cost of service standards:
  - Horizontal equity: Users with similar costs of service face similar rates
  - Vertical equity: Users with dissimilar costs of service face dissimilar rates
Two Approaches to Cost of Service Studies

• Embedded or Fully Allocated COS Study
  ▪ Uses capital & operating costs that have been historically embedded (spent, invested, or sunk)
  ▪ Built on accounting cost data generated in the day-to-day operations of the water utility
  ▪ Approach used by the Water Authority

• Incremental or Marginal COS Study
  ▪ the cost of providing additional water service
  ▪ forward-looking study of resource costs
Fully Allocated Costs

- Attributable Costs
  - Costs that can be attributed to specific services

- Non-Attributable Costs
  - Also know as “joint” or common costs
  - Costs created from a single production process that produces two or more services
  - Example: Distribution systems that provide fire protection also provide nonemergency delivery

- Fully Allocated Costs assign/allocate all costs
Anatomy of a Cost of Service Study

- Customer costs are allocated to customers
  - Costs of metering, billing, & administrating
  - Costs that depend on number of customers, not volume of water
- Remaining costs are apportioned to customer classes in three steps
  - Cost Functionalization
  - Cost Classification
  - Cost Allocation

Source: James Bonbright, 1961
Where are we in the Process?

- Desal Project Cost Analysis
- Rate Structure Alternatives Developed
- Board Feedback on Alternatives
- Board Preferred Rate Structure
- Request for Alternate Structures
- Cost of Service Study
- Rate & Charge Determination

Cost of Service Study RFP Issued 10/5/2012

WE ARE HERE

Required Changes
Summary

- The rate design analyses is being conducted for the Carlsbad Desalination project with the Board providing policy direction on rate structure
  - Independent review of proposed Rate Structure Service Categories and Alternative Conceptual Cost Allocations
  - Full Cost of Service Study RFP on the streets now

- Cost of Service Study timeline
  - December 2012 – May 2013
  - Will incorporate Board’s rate structure policy direction

3 Steps of Cost of Service Applied to Carlsbad Desalination
• July 23, 2012 Administration & Finance Committee
  ▪ Presented 4 alternative structures consistent with cost of service
  ▪ Alternatives refined based on previous Board discussions
  ▪ Reviewed existing Board policy for non-commodity charges
  ▪ Reviewed existing practices for allocating costs to service categories
• Alternatives differentiated by two variables
  ▪ The amount of desalination costs allocated to treatment service
  ▪ Collection of a portion of supply revenue through a fixed charge based on historic maximum dependence on the Water Authority
## Rate Structure Alternatives

<table>
<thead>
<tr>
<th>Rate &amp; Charge</th>
<th>Alt 1a Twin Oaks Inefficiencies to Treatment</th>
<th>Alt 1b WQ Benefit to Treatment</th>
<th>Alt 2a Twin Oaks Inefficiencies to Treatment Standby Reliability</th>
<th>Alt 2b WQ Benefit to Treatment Standby Reliability</th>
<th>Range of Difference (High-Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAC $/ME/Month</td>
<td>+$2.20</td>
<td>+$2.20</td>
<td>+2.20</td>
<td>+$2.20</td>
<td>$0</td>
</tr>
<tr>
<td>Treatment $/AF</td>
<td>+$20</td>
<td>+$34</td>
<td>+$20</td>
<td>+$34</td>
<td>+$14</td>
</tr>
<tr>
<td>Transportation $/AF</td>
<td>+$30</td>
<td>+$30</td>
<td>+$30</td>
<td>+$30</td>
<td>$0</td>
</tr>
<tr>
<td>Supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+$13</td>
</tr>
<tr>
<td>Melded Rate $/AF</td>
<td>+$65</td>
<td>+$58</td>
<td>+$39</td>
<td>+$34</td>
<td></td>
</tr>
<tr>
<td>Standby Charge $/AF</td>
<td>$0</td>
<td>$0</td>
<td>+$19</td>
<td>+$18</td>
<td></td>
</tr>
<tr>
<td>2013 All-In Rate</td>
<td>TR: 9.1% UNTR: 9.5%</td>
<td>TR: 9.7% UNTR: 8.8%</td>
<td>TR: 8.6% UNTR 8.8%</td>
<td>TR: 9.2% UNTR: 8.2%</td>
<td>TR: 1.1% UNTR: 1.3%</td>
</tr>
</tbody>
</table>
Comparison of Alternatives

- Individual cost data compiled for each member agency for each alternative structure
  - Included total commodity and non-commodity charges
  - Based on inclusion of Carlsbad desalination in 2013 rates and charges
- 61% of agencies had less than 1% difference between alternatives
- 22% of agencies had between 1% - 2% difference
- 17% of agencies had between 2% - 3% difference
Range of Board/Member Agency Comments on Rate Structure Alternatives

• Treated water customers should pay for the full benefit of desalination through the treated water surcharge
• Treated water customers should pay for the cost of Twin Oaks inefficiencies because it is a cost of treatment
• Both treated and raw water customers should pay for the cost of Twin Oaks inefficiencies through the supply charge because it results from creation of a new supply
• Cost of supply should be based on existing sources the rest of the cost should be allocated between treatment and transportation
• Allocation of standby reliability charge by retail meters disproportionately affects agencies with more meter than water use
• Desal conveyance pipeline costs should be allocated to supply not transportation as a cost of supply development
• Desal costs should not be part of calculation of IAC
• All member agencies should have fixed cost allocation contracts for the desalination project
Inclusion of Additional Rate Structure Alternatives

- Based on comments staff developed 3 additional alternatives
  - Allocating desal conveyance cost to supply
  - Setting the supply value to the current cost of IID transfer
    - For illustrative purposes both additional alternatives are modifications to alternative 2b (water quality benefit to treatment and inclusion of fixed standby supply reliability charge to the supply component)
  - Requiring fixed cost allocations to all member agencies
<table>
<thead>
<tr>
<th>Rate &amp; Charge</th>
<th>Desal Conveyance to Supply</th>
<th>Set Supply Cost to IID Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Desalination Cost</td>
<td>2,350</td>
<td>2,350</td>
</tr>
<tr>
<td>IAC $/ME/Month</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Treatment $/AF</td>
<td>390</td>
<td>524</td>
</tr>
<tr>
<td>Transportation $/AF</td>
<td>60</td>
<td>300</td>
</tr>
<tr>
<td>Supply</td>
<td>1,400</td>
<td>1,026</td>
</tr>
<tr>
<td>Melded Supply $/AF</td>
<td>1,120</td>
<td>820</td>
</tr>
<tr>
<td>Standby Charge $/AF</td>
<td>280</td>
<td>206</td>
</tr>
</tbody>
</table>
# Rate Structure Alternatives

<table>
<thead>
<tr>
<th>Rate &amp; Charge</th>
<th>Alt 1a Twin Oaks Inefficiencies to Treatment</th>
<th>Alt 1b WQ Benefit to Treatment</th>
<th>Alt 2a Twin Oaks Inefficiencies to Treatment</th>
<th>Alt 2b WQ Benefit to Treatment Standby Reliability</th>
<th>Alt 3 Desal Conveyance to Supply</th>
<th>Alt 4 Set Supply Cost to Current IID Transfer</th>
<th>Range of Difference (High-Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAC $/ME/Month</td>
<td>+$2.20</td>
<td>+$2.20</td>
<td>+$2.20</td>
<td>+$2.20</td>
<td>+$2.20</td>
<td>+$2.20</td>
<td>-</td>
</tr>
<tr>
<td>Treatment $/AF</td>
<td>+$20</td>
<td>+$34</td>
<td>+$20</td>
<td>+$34</td>
<td>+$34</td>
<td>+$67</td>
<td>$47</td>
</tr>
<tr>
<td>Transp. $/AF</td>
<td>+$30</td>
<td>+$30</td>
<td>+$30</td>
<td>+$30</td>
<td>+$7</td>
<td>+$30</td>
<td>$23</td>
</tr>
<tr>
<td>Supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melded Rate$/AF</td>
<td>+$65</td>
<td>+$58</td>
<td>+$39</td>
<td>+$34</td>
<td>+$54</td>
<td>+$23</td>
<td>$26</td>
</tr>
<tr>
<td>Standby Charge$/AF</td>
<td>$0</td>
<td>$0</td>
<td>+$19</td>
<td>+$18</td>
<td>+$22</td>
<td>+$16</td>
<td>$3</td>
</tr>
<tr>
<td>2013 All-In Rate</td>
<td>TR: 9.1% UNTR:9.5%</td>
<td>TR: 9.7% UNTR:8.8%</td>
<td>TR: 8.6% UNTR:8.8%</td>
<td>TR: 9.2% UNTR:8.2%</td>
<td>TR: 9.3% UNTR:8.3%</td>
<td>TR: 10.8% UNTR: 6.9%</td>
<td>TR: 2.2% UNTR:2.6%</td>
</tr>
</tbody>
</table>

IAC $/ME/Month: +$2.20
Treatment $/AF: +$20
Transp. $/AF: +$30
Melded Rate$/AF: +$65
Standby Charge$/AF: $0

TR: Total Rate
UNTR: Unbilled Rate
Member Agency Fixed Cost Allocation

- Allocating fixed cost responsibility to all member agencies
- Full cost e.g. $2,350/AF
- Based on historic use
- Using multi-year average or peak year demand
- Reset every 10 years

<table>
<thead>
<tr>
<th>Agency</th>
<th>2002-2011 Avg Desal cost share</th>
<th>2002-2012 Share of Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlsbad M.W.D.</td>
<td>3.4%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Del Mar, City of</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Escondido, City of</td>
<td>4.2%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Fallbrook P.U.D.</td>
<td>2.8%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Helix W.D.</td>
<td>5.9%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Lakeside W.D.</td>
<td>0.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>National City, City of Oceanside,</td>
<td>0.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Olivenhain M.W.D.</td>
<td>5.2%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Otay W.D.</td>
<td>3.8%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Padre Dam M.W.D.</td>
<td>6.3%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Pendleton</td>
<td>2.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Poway, City of</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Rainbow M.W.D.</td>
<td>2.4%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Ramona M.W.D.</td>
<td>4.8%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Rincon Del Diablo M.W.D.</td>
<td>1.8%</td>
<td>1.9%</td>
</tr>
<tr>
<td>San Diego, City of</td>
<td>1.4%</td>
<td>1.3%</td>
</tr>
<tr>
<td>San Dieguito W.D.</td>
<td>35.8%</td>
<td>34.4%</td>
</tr>
<tr>
<td>Santa Fe I.D.</td>
<td>0.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>South Bay I.D.</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Vallecitos W.D.</td>
<td>1.9%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Valley Center M.W.D.</td>
<td>3.2%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Vista I.D.</td>
<td>7.0%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Yuima M.W.D.</td>
<td>3.1%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Questions in Fixed Cost Allocation

- Selecting an allocation method that provides a clear nexus with cost responsibility
- Defining the relationship between fixed allocation of cost to water shortage and Drought Response Plan and shortage allocation
- What if an agency can no longer use its annual allocation, are they financially responsible for the whole amount?
  - If not, does it get reallocated to the remaining agencies?
  - Can the supply be sold to another agency?
- Is cost responsibility for the minimum purchase commitment of 48,000 AF
  - Who benefits from the lower variable cost water between 48,000- 56,000 AFY
- If future adjustments are allowed what is the method for adjustment?
<table>
<thead>
<tr>
<th>Issue</th>
<th>Project Cost Allocation</th>
<th>Change to Rate Structure</th>
<th>Cost of Service Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated water customers pay full treatment benefit of desal</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Treated water customers only OR all customers pay for Twin Oaks inefficiencies</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Set cost of supply to an existing source—balance of cost to treatment and transportation</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Desal conveyance pipeline costs to supply</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Issue</td>
<td>Project Cost Allocation</td>
<td>Change to Rate Structure</td>
<td>Cost of Service Evaluation</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>--------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Creation of Standby Reliability Charge cost responsibility to member agencies</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Methodology for Standby Reliability Charge cost responsibility</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fixed cost allocation contracts to member agencies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Rate Analysis Summary

Cost of Service

• Differences in alternatives are related to decisions on cost allocation to specific service categories
  ▪ With the exception of a new standby reliability charge alternatives are not related to changes in rate structure

• Allocation to specific service categories will be subject to independently conducted Cost of service Study
  • Allocation of desalination costs will be included in cost of service study
  • Potential impact of final cost allocations to member agencies between <1%-3%

Rate Structure Policy

• Addition of a fixed standby reliability charge for supply is a Board policy decision
  ▪ Methodology to allocate costs to new charge is subject to cost of service evaluation

• Allocation of fixed contractual cost responsibility to member agencies is a Board policy decision
  ▪ Independent cost of service consultant will evaluate accuracy of cost responsibility assignments under Board policy
Next Steps

What is being asked
• Policy decision on adding a new fixed standby reliability charge to supply cost revenue collection

What is not being asked
• Approval of the allocation of specific dollar amounts to service categories or any rate setting actions
  ▪ Independent cost of service consultant will determine appropriate allocation of costs to service categories under existing Board policy and California law