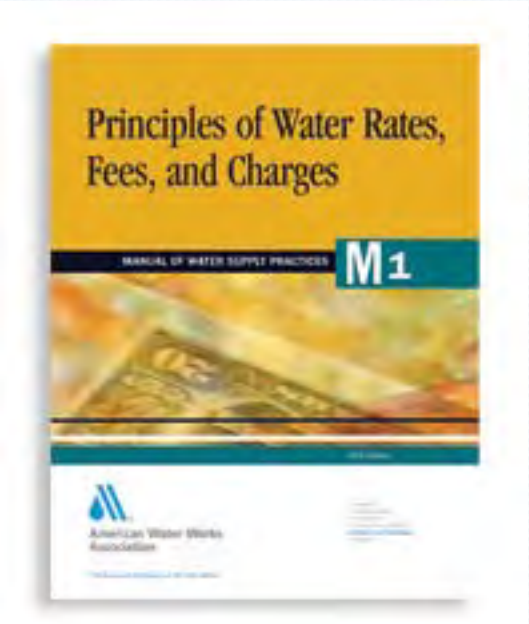
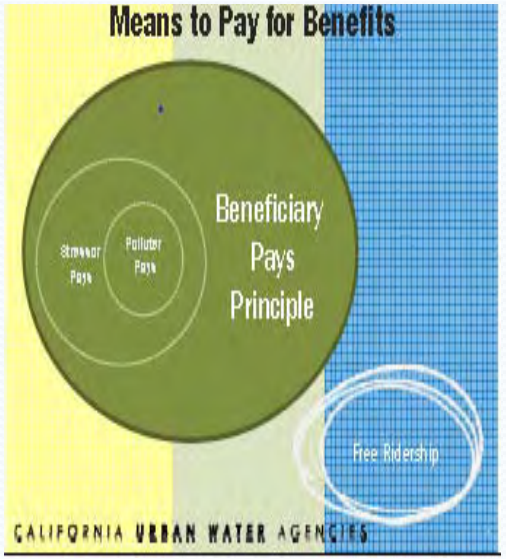
Incorporating Carlsbad Seawater Desalination Project into SDCWA Rates and Charges





Special Board of Directors' Meeting
July 12, 2012

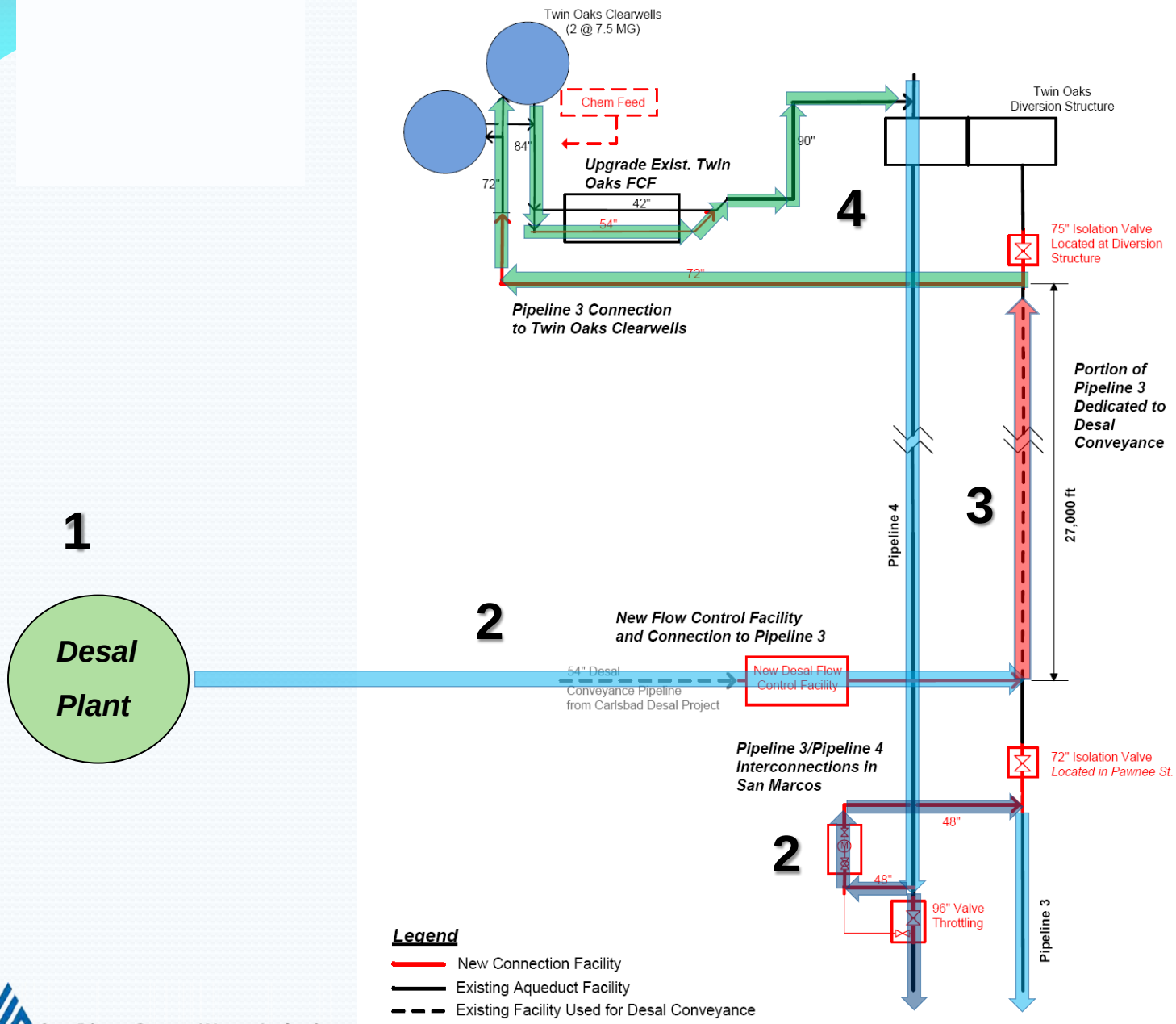
What Are the Benefits of the Carlsbad Desalination Project?

- **Key question - how to allocate cost of Carlsbad desalination to ensure long-term fiscal sustainability for Water Authority and ratepayer equity for member agencies**
  - What are the benefits of this new supply?
  - Who benefits from the new supply and how do they benefit?
    - Need to reflect reliability benefit in revenue collection
    - Need to differentiate between treated and untreated customers
    - Avoid free-ridership -- capture the standby benefit
- **What are the options to collect revenue from beneficiaries?**
  - Volumetric charges
  - Fixed charges
  - Growth charges
  - Other?

Potential Project Benefits

- **Water supply**
  - Water available for delivery
- **Water treatment**
  - High quality treated water
- **Reliability – of source**
  - Drought proof
  - Improves Water Authority position relative to MWD Preferential Rights Shortage Allocation
  - Emergency water source
  - Enhances effectiveness of Carryover Storage Supplies

Carlsbad Desalination Project
Proposed Aqueduct Connection Facilities



San Diego County Water Authority

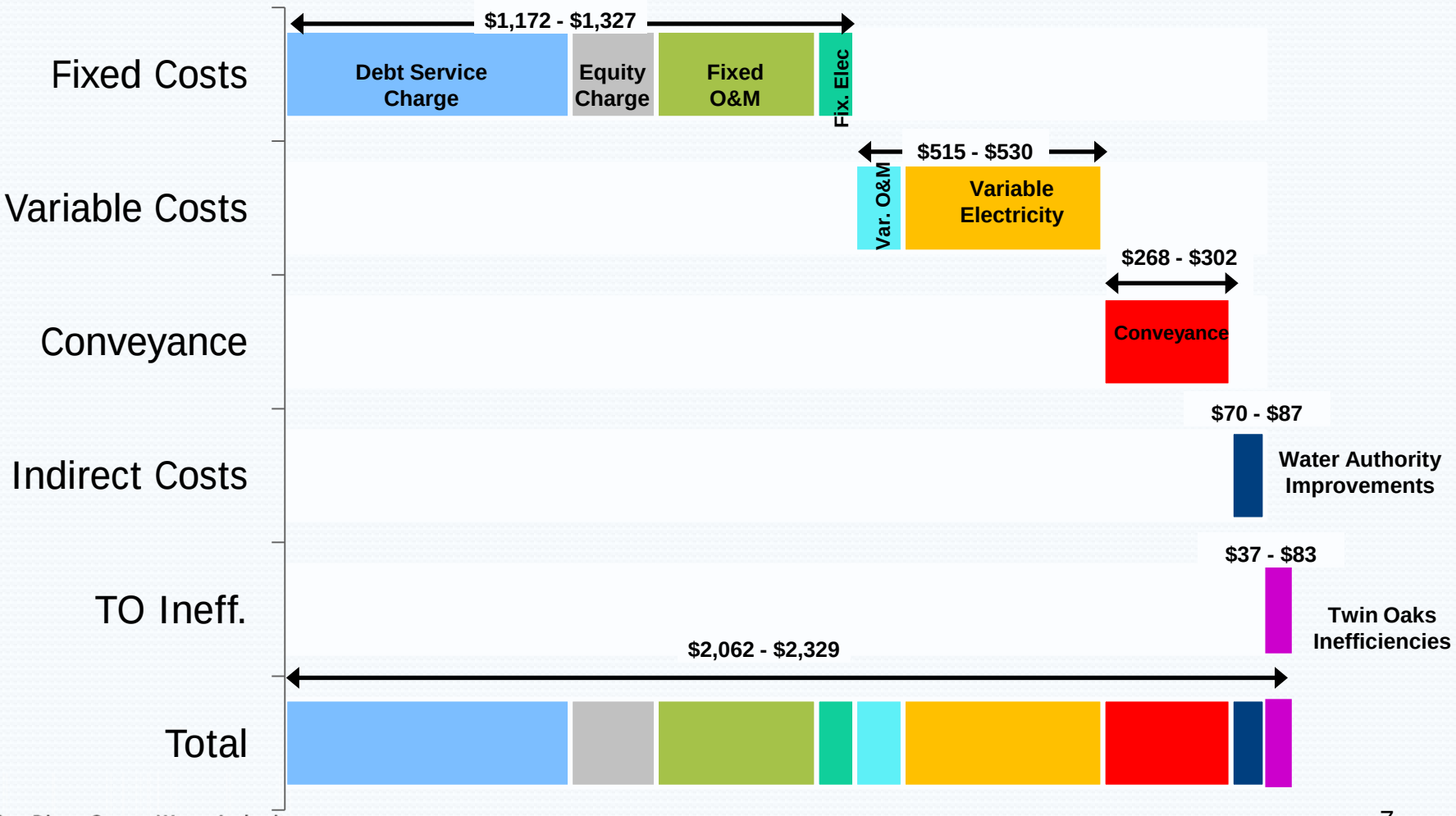
Allocating To The Existing Rate & Charge Structure

Service Function	Revenue Requirement	Cost Allocation
Supply	Water purchase price, transportation charges, debt service capital facilities	Costs water purchases (MWD, IID, canal lining, (*Desalination)*
Treatment	MWD treatment surcharge, operational costs, debt service	MWD, Twin Oaks WTP and other in-region treatment facility costs
Customer Service	Operational costs, debt service	Costs to support the functioning of the Water Authority and regional planning
Transportation	Operational costs, debt service	Costs associated with the conveyance of water
Storage	Primarily debt service on capital facilities, minor operating costs	ESP, CSP and associated conveyance

Other Water Authority Rates and Charges

Charge	Method of Collection	Use of Funds	Desal Impact
Non-Commodity Charges			
Property Tax	Share of County property tax assessment	Unrestricted	Indirect – Assessed value of plant
Standby Charges	$10 per acre or parcel	Capital facilities	No impact
Capacity Charges	New meter charges (System - $4,326/ME) (Treatment - $166/ME)	Capital facilities	Direct – System fee increased to reflect value of plant and pipeline
IAC Charge	Fee per meter equivalent	Unrestricted	Direct – Pipeline and potentially plant included in calculation

The Water Unit Price with Conveyance and Water Authority Improvements



3 Steps of Cost of Service Applied to Carlsbad Desalination

Determine revenue requirements — **Allocate to service function** — **Allocate to customer, based on benefits received**

Cost of:
- Poseidon water price
- P3 rehab
- Twin Oaks improvements
- Twin Oaks inefficiency

→

1. Supply
2. Treatment
3. Storage
4. Transportation
5. Other?

(i.e. reliability)

→

- Water taken (per AF)
- Ability to take water (number of meters)

Key Considerations

In applying the principles of *Cost of Service* and *Beneficiaries Pay* to Carlsbad Desalination

- **Multiple service categories benefit from the production of desalinated water**
- **Revenue requirements for each category should be collected through the current mix of fixed and commodity charges**
  - Best reflects beneficiaries and avoids free ridership
- **Reliability is a key driver of desalination and a primary benefit**
  - Should "Reliability" be a potential service category?

Potential Rate and Charge Options

- Scenario 1
  - **Integrate desalination into existing rates and charges**
  - **Allocate revenue to multiple service categories**
- Scenario 2
  - **Add a new category to existing rates and charges**
    - Create a Reliability Charge
    - Meter based charge – Recovers costs allocated to the enhanced reliability of supply
    - Requires methodology that establishes a nexus between cost and benefit

Rate Analysis Assumptions

- **Rates shown are for illustrative purposes only**
  - **Based on high estimates of Carlsbad Project costs**
    - Assumes Annual Minimum of 48,000 AF
  - **Implementation of rates and charges for Carlsbad Desalination adopted only after an Independent Cost of Service Study**
  - **Estimated Rate Impacts are based on "what if" Carlsbad Desalination had been added to 2013 rates and charges**
    - All values expressed as 2012 dollars
    - Total water sales estimated at 466,000 AF for 2013
    - Storage and treatment rates are 2013 amounts
    - MWD Tier 1 2013 Untreated rate of $593/AF
    - *Rates and cost numbers rounded for example purposes*

Revenue Collection For Carlsbad Desalination Scenario #1

Total Desal Cost $/AF	Existing Non-Commodity Charges	Collected From Water Rates
•Poseidon water price •Cost of P3 rehab •Cost of Twin Oaks improvements •Cost of Twin Oaks inefficiency	1. IAC 2. Property Tax 3. Parcel Charge 4. Capacity Charge	• Applicable Service Categories 1. Treatment 2. Transportation 3. Supply 4. Storage
$2,350/AF	minus $500/AF (IAC Only)	equals $1,850/AF

Identifying Transportation Benefit of Seawater Desalination

- **Transportation rate category definition**
  - Water Authority facilities used to physically transport water to member agency meters
- **Conveyance Pipeline, Pipeline 3 and improvements at Twin Oaks WTP are necessary to transport water to member agencies**
  - Costs related to Conveyance, Pipeline 3 and Twin Oaks WTP improvements are incorporated into transportation system costs and become a single transportation rate
  - Similar to all other pipeline and appurtenant facilities owned and operated by the Water Authority for the express purpose of transporting regional water supplies

Storage Benefit of Desalination

- Desalination Enhances Emergency and Carryover Water Service
- Increases 2 month Emergency Service by 11%
- Increases 6 month Emergency Service by 33%
- Increases effectiveness of Carryover Storage by 68%
  - Reduces carryover storage demand by total desal production

Calculating the Storage Benefit of Desalination

Option #1: Set at full storage charge of $130/AF

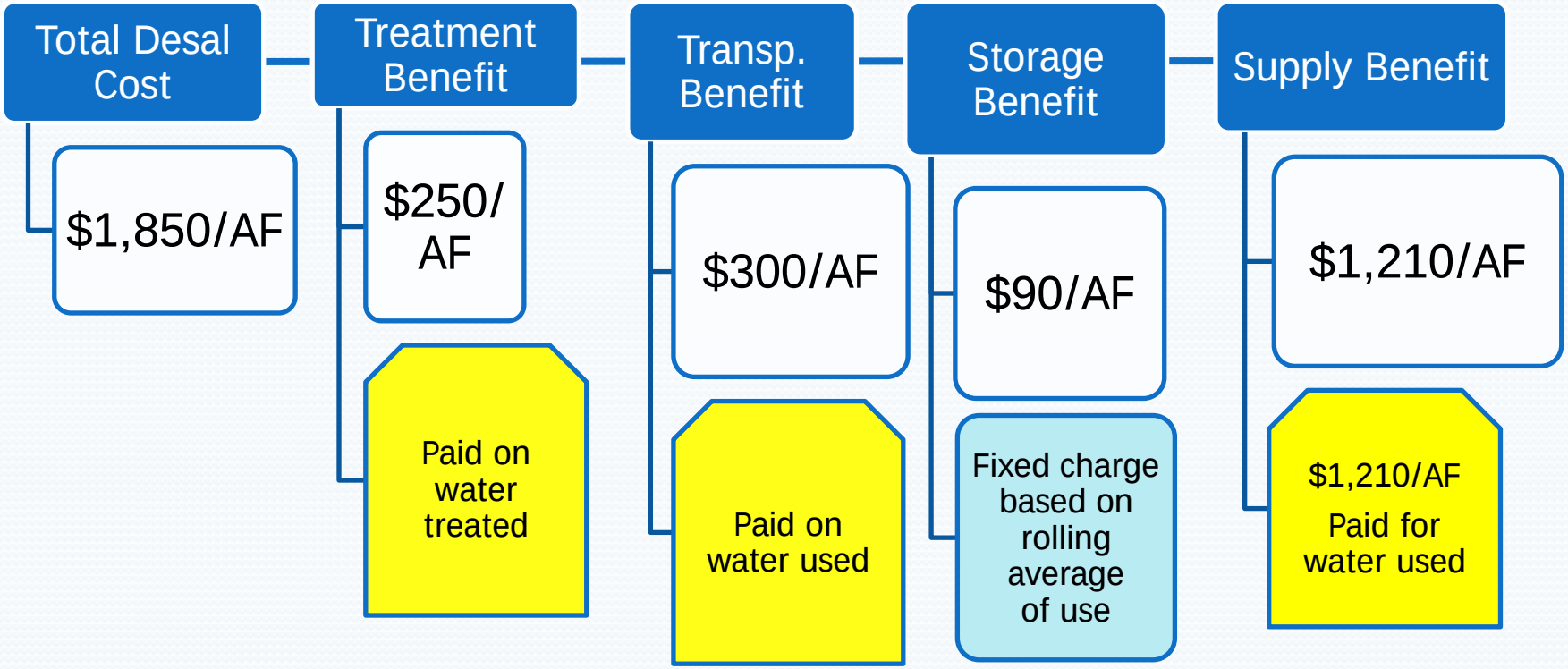
- Provides similar benefits as all other storage
- Similar to valuation of treatment benefit of Desalination

Option #2: Assign specific benefits to emergency and carryover service

- ESP is >= ¾ of storage charge
- Weighted Enhancement to ESP
  - 22% of 75% of $130/AF= $21/AF
- Weighted Enhancement to Carryover Storage
- 68% of 25% of $130/AF =$22/AF

- Range of storage benefits
  - **$43/AF - $130/AF**
- Example Purposes
  - Use the average of two methods
  - $90/AF (rounded for example purposes)

Scenario #1: Existing Rates & Charges



Scenario #1: Existing Rates & Charges

Total Desal Cost

- $1,850/AF
- **+103/AF**

Treatment Benefit

- $250/AF
- Paid on water treated
- Neutral to Treatment surcharge

Transp. Benefit

- $300/AF
- Paid on water used
- **+ $30/AF**

Storage Benefit

- $90/AF
- Fixed charge based on rolling average of use
- **+ $10/AF**

Supply Benefit

- $1,210/AF
- Paid for water used
- Melded Supply Rate Impact after subtracting MWD water cost **+$63/AF**

Revenue Collection For Carlsbad Desalination Scenario #2

Total Desal Cost $/AF

- Poseidon water price
- Cost of P3 rehab
- Cost of Twin Oaks improvements
- Cost of Twin Oaks inefficiency

Existing Non-Commodity Charges

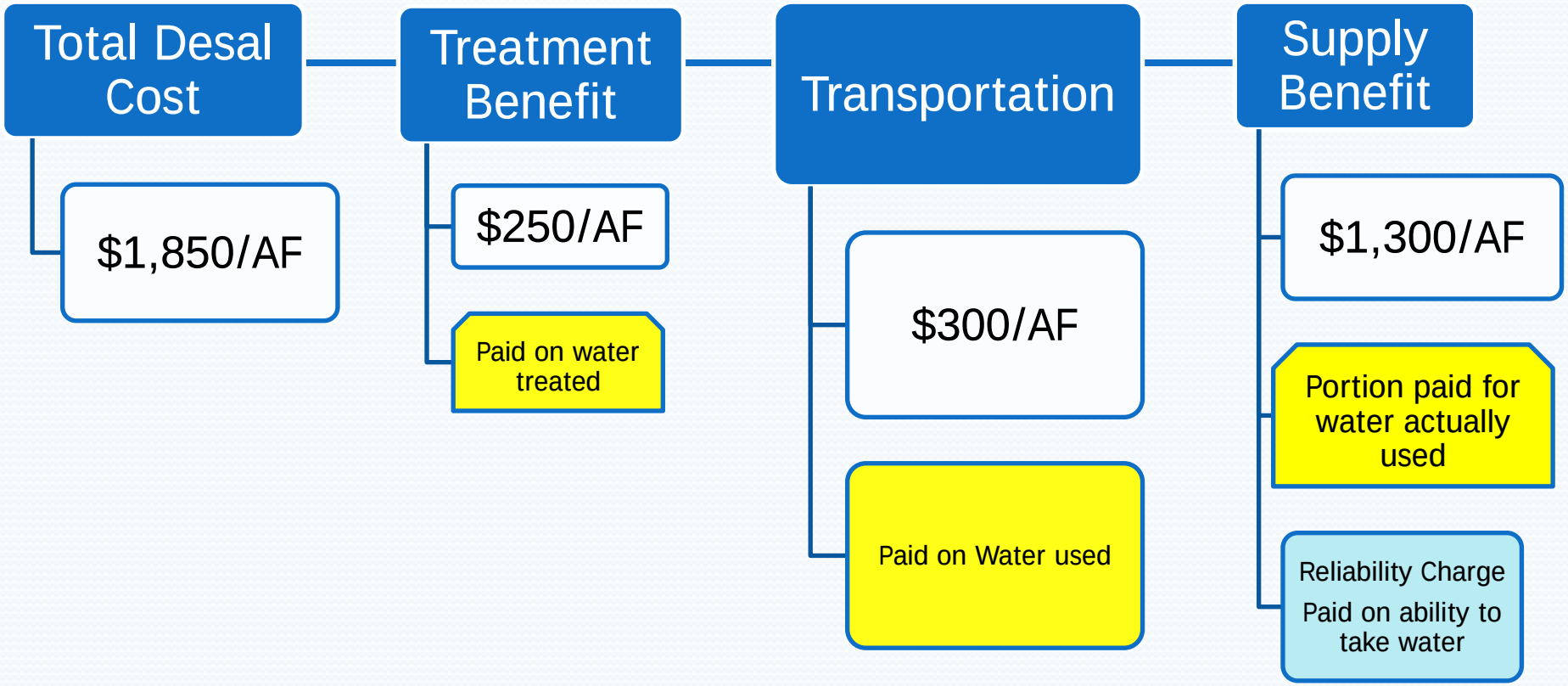
1. IAC
2. Property Tax
3. Parcel Charge
4. Capacity Charge

Collected From Water Rates

Applicable Service Categories
1. Treatment
2. Transportation
3. Supply
   a) Volumetric
   b) Reliability Charge

$2,350/AF minus $500/AF (IAC Only) equals $1,850/AF

Scenario #2: Treatment and Supply w/Reliability Charge



Calculating a Reliability Charge: What is the signal to develop a new supply?

Option #1: Link to MWD imported water reliability

- **Percent of time possibility of supply shortage**
  - 2010 IRP Dry-Year Gap Analysis with existing supplies and storage assets
    - Shortages will occur 59% of the time up to maximum of 1.3 MAF
    - Additional supplies and storage needed to enhance reliability
- **Water Authority 2010 Urban Water Management Plan**
  - In 2025-2030 MWD accounts for 44%-47% of regional dry-year supplies
    - 44%-47% of supply unreliable 59% of the time= 26%-28% "reliability gap" weighted for proportion of MWD to total supply

Other Methods Linking a Reliability Charge To MWD Supply Reliability Indicators

- **2010 IRP Dry Year Gap Analysis with Core Resources Strategy**
  - Shortages will occur approx. 20% of the time
  - Assumes additional local and imported supplies
- **MWD estimate of need to take water from storage**
  - 7 out of 10 years
  - MWD approx. 45% of dry year supplies in 2025-2030
    - 30% weighted factor that MWD supplies could be insufficient to meet demand

Example of Linking a Reliability Charge To MWD Supply Reliability

- **Multiple ways to approximate reliability of least reliable supply**
- **MWD is least reliable supply**
  - What is the signal to develop a new more reliable supply
  - How to value the "risk management" premium
- **Purpose of providing an example reliability charge:**
  - Average of 3 methodologies
    - 25% of the time there is a potential risk of shortage
  - New reliable supplies are developed to address a documented "reliability gap"

Scenario #2: Treatment and Supply w/Reliability Charge linked to MWD Reliability Gap

Total Desal Cost

- $1,850/AF
- Total Rate Impact
  $70/AF
  $1.50 ME per month

Treatment Benefit

- $250/AF
- Paid on water treated
- Neutral to Treatment Surcharge

Transportation Charge

- $300/AF
- Paid on water used
- Transportation Rate Impact
  +$30/AF

Supply Charge

- $1,300/AF
- Portion paid for water used
  $975/AF
- Reliability Charge
  (25% of supply cost)
  $1.50 ME per month
- Melded Supply Rate Impact after subtracting MWD water cost
  +40/AF

Calculating a Reliability Charge Based on MWD Rates

Option #2: Use cost above least reliable supply

- By 2030 Desalinated Water supply costs may be lower than MWD Tier 1 Untreated
  - Projected MWD Supply rate with Bay Delta Fix @ $200/AF
    - $1,936/AF at 15-year midpoint in Poseidon Agreement (2030)
  - Projected Desal Cost allocated to supply
    - $1,872/AF at 15-year midpoint in Poseidon Agreement (2030)
  - Average price differential 2016 -2030
  - $247/AF (2012 dollars adjusted for inflation)
- Recommendation: Use the average of the projected annual price differential for the first 15 years of the Agreement to establish a value of reliability

Scenario #2: Treatment and Supply w/Reliability Charge linked to Price Differential of MWD Untreated Rate

Total Desal Cost

- $1,850/AF
- Total Rate Impact
  $77/AF
  $1.10 ME per month

Treatment Benefit

- $250/AF
- Paid on water treated
- Neutral to Treatment Surcharge

Transportation Charge

- $300/AF
- Paid on water used
- Transportation Rate Impact
  +$30/AF

Supply Charge

- $1,300/AF
- Portion paid for water actually used
  $1,050/AF
- Reliability Charge
  $1.10 ME per month
- Melded Supply Rate Impact after subtracting MWD water cost
  +47/AF

Summary

- **Allocation to Rate Categories is for illustrative purposes only**
  - Rates and cost allocation methodologies would not be finalized until completion of an Independent Cost of Service Study
- Different allocation approaches vary little in overall impact to member agencies purchasing water form the Water Authority
- Potential Reliability Charge reduces revenue volatility and seeks to better match benefits with beneficiaries

Incorporation Of Carlsbad Desalination into Rates & Charges: Next Steps

- **July Board meeting**
  - Continue discussion on alternatives
- **July-August**
  - Discuss alternatives with Member Agency Managers and Finance Officers
- **August Board Meeting**
  - Continuing discussions on selecting a structure
- **September Board Meeting**
  - Consider approving a framework Structure for incorporating Carlsbad Desalination into Rates and Charges subject to completion of an Independent Cost of Service Study

San Diego County Water Authority

Member Agency Purchases of Water Authority-owned supplies from the Carlsbad Desalination Project

Special Board of Directors' Meeting
July 12, 2012

Background

Member agencies interested in sharing in the full cost of the Carlsbad project in exchange for a local water supply

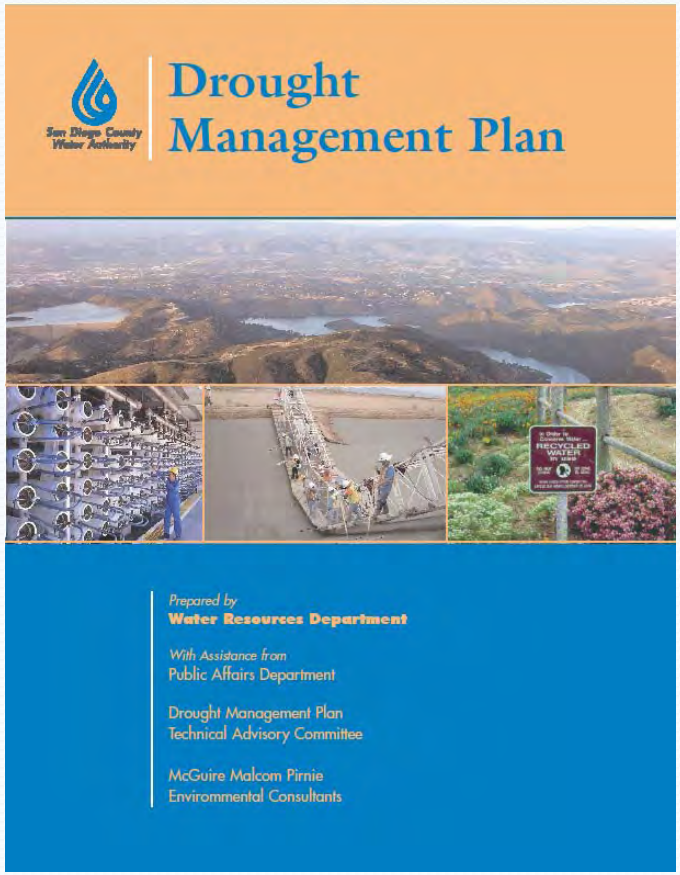
- Several former Desal Partner agencies expressed interest during discussions preceding approval of Water Authority/Poseidon Term Sheet in July 2010
- Guiding principles approved by the Board in June 2011
- Guiding principles modified by the Board in October 2011 to reduce the time allowed to **60** days from public release of the draft water purchase agreement for member agencies to notify the Water Authority of their intent to purchase desalinated water

Member Agency Purchase – Guiding Principles October 2011

- Requires separate purchase contract between member agency and the Water Authority
  - Board consideration and approval
- Requires full cost recovery pricing
  - Same cost responsibility and risk profile as Water Authority
  - Reduces Water Authority revenue requirement and lessens impact on rates and charges
- Requires commitment to purchase a fixed annual amount
  - One-time determination for fixed term equal to WPA term
  - Decision within 60 days from release of final draft agreement

Member Agency Purchase – Guiding Principles

- Purchase limits
  - Max. of 49% of the total expected annual supply
  - Majority of benefits accrue to the region
- A separate administration fee will be imposed
- Local water purchased treated as a local supply under Water Shortage Management and Drought Response Plan

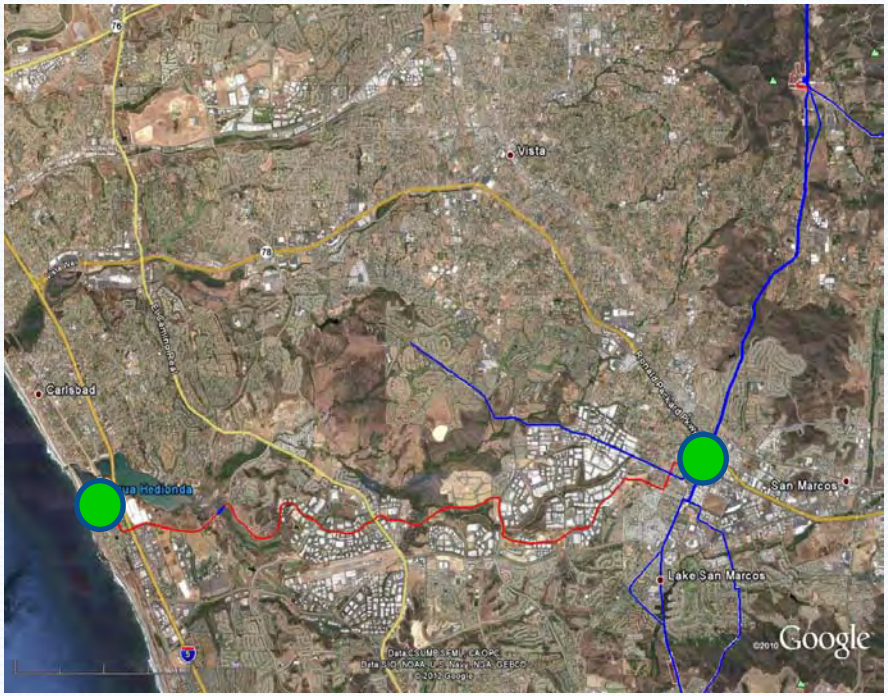


Member Agency Purchase – Guiding Principles

- Purchased local water will not be included in the calculation of the Storage Charge (Highly reliable supply)
  - Offsets a need for emergency/carryover storage
- Purchased local water will be delivered in a similar manner to other Water Authority deliveries to member agency
- Purchased water is not eligible for Water Authority local supply incentives
  - Purchase price will be reduced by MWD subsidy, if obtained
- A reduced cost to the Water Authority from grant funding will reduce member agency's purchase price

Member Agency Purchase – Guiding Principles

- Application limited solely to Carlsbad Desalination Project
  - Unique circumstance – shifted from member agency sponsored to Water Authority sponsored project
  - Requires regional economies of scale to implement
  - Not establishing a precedent for purchase of other existing or future Water Authority supplies



Member Agency Purchase – Guiding Principles What has changed since approval?

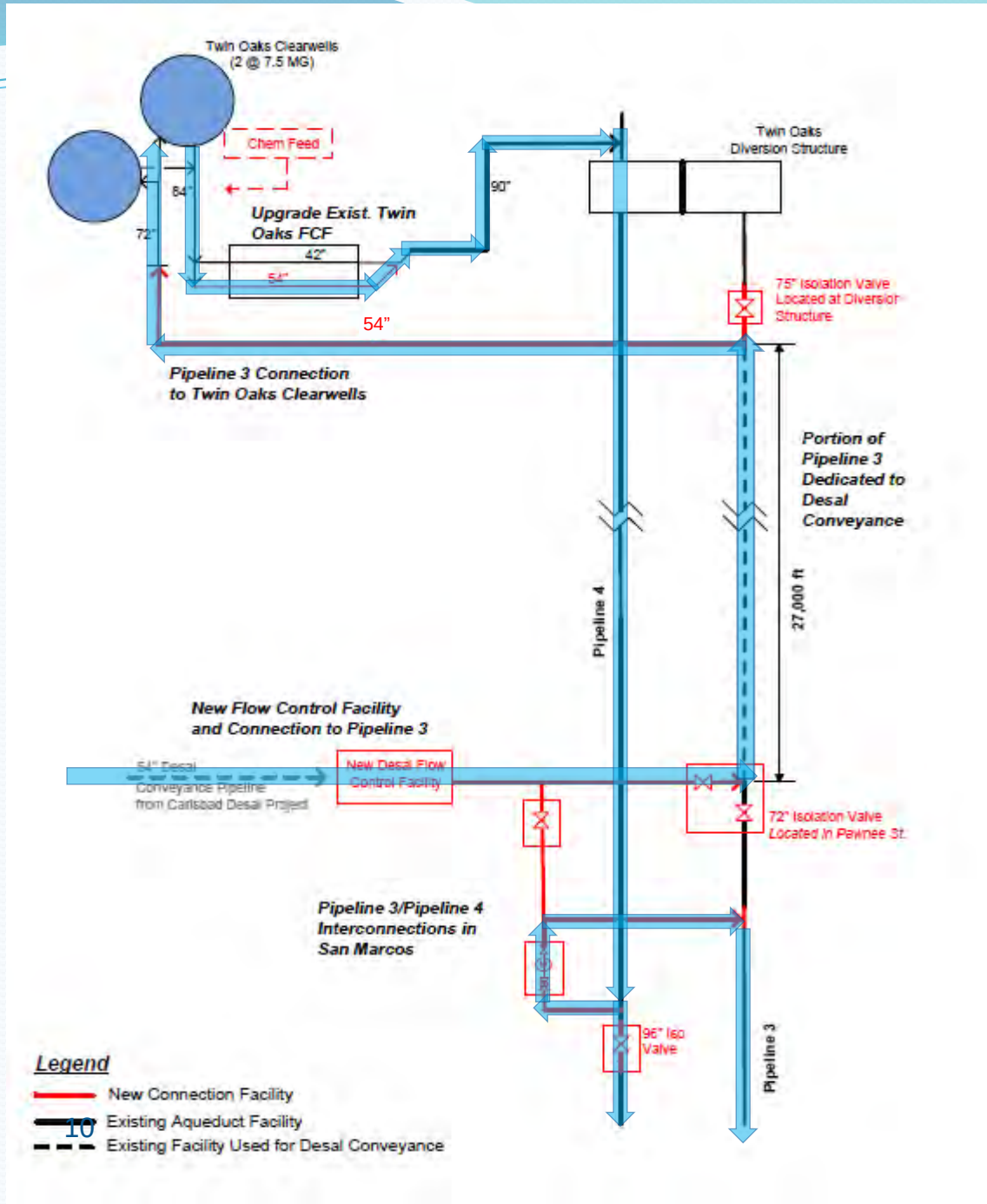
- Originally,
  - A single water purchase contract / single bond issue for the plant and the pipeline
  - Fixed annual purchase amount
- Now,
  - Water purchase agreement for supply purchase
  - Separate agreement for conveyance pipeline construction
  - 2 bond issues; 1 for the plant and 1 for the pipeline (bonded by the Water Authority)
  - Minimum and maximum annual purchase amounts

Key Contract Issues/Concerns

- Determination of member agency annual contracted quantity
  - Carlsbad limited to 10,000 AFY per agreement approved Sept. 2011
  - Annual contracted quantity will be delivered in monthly amounts determined at contract execution
  - Similar to Water Authority Minimum and Maximum amount, member agency access to lower cost of surplus water above 48 TAF
  - Annual contracted quantity will be prorated for Uncontrollable circumstances, default, breach, etc.
    - Example: If Poseidon fails to deliver minimum or maximum, member agency will be treated the same as Water Authority

Project Risk Allocation

Risk Description	Poseidon	Water Authority
Construction Risk – that facility is not completed on time, on cost and according to design standards	X	
Permitting Risk – that current permit and environmental mitigation requirements increase	X	
Change in Law Risk – that future unanticipated laws or regulations increase operating costs	X	X
Technology Risk – that the plant technology does not perform as expected	X	
Output Risk – that the plant produces less than the projected volume of water	X	
Operating Margin Risk – that the price of water is not adequate to generate enough revenue to pay expenditures or may increase more than projected	X (Budget Cap)	X (Subject to CPI)
Pipeline Operating Risk – the Pipeline connecting the Plant to the regional aqueduct system and appurtenant facilities transport acceptable water to Water Authority wholesale customers	X	X
Electricity – the cost of electricity is accounted for in the water price	X (Electricity Consumption)	X (Electricity Price)


Twin Oaks Clearwells
(2 @ 7.5 MG)
Chem Feed
84"
72"
Upgrade Exist. Twin
Oaks FCF
42"
54"
90"
Twin Oaks
Diversion Structure
75" Isolation Valve
Located at Diversion
Structure
54"
Pipeline 3 Connection
to Twin Oaks Clearwells
Portion of
Pipeline 3
Dedicated to
Desal
Conveyance
Pipeline 4
27,000 ft
New Flow Control Facility
and Connection to Pipeline 3
54" Desal
Conveyance Pipeline
from Carlsbad Desal Project
New Desal Flow
Control Facility
72" Isolation Valve
Located in Pawnee St.
Pipeline 3/Pipeline 4
Interconnections in
San Marcos
96" Iso
Valve
Pipeline 3
Legend
New Connection Facility
Existing Aqueduct Facility
Existing Facility Used for Desal Conveyance

Key Contract Issues/Concerns

- Member Agencies pay full cost recovery
- Unit Price for contracted quantity
  - Local Supply Development – *Full contract cost recovery*
    - Plant: Poseidon's fixed and variable unit production costs
    - Pipeline: Water Authority bonded pipeline costs
    - TOVWTP inefficiencies (due to desalinated water production)

  +

  - Transportation – *Shared through Water Authority rates*
    - Upgrades to existing facilities
      - Pipeline 3 Relining costs
      - TOVWTP improvements costs
    - Similar to improvements made to other existing facilities

  +

  - Administration charge (assessed annually)

Member Agency Purchase – Details to be addressed

- Member agency access to supplemental water above 48,000 AFY
  - Lower cost water available on a pro-rata basis
- Ensure no double-charging
- Maintain flexibility in operating the aqueduct system

Member Agency Purchase - Next Steps

- Schedule member agency meeting to discuss draft contract
- Obtain member agency input
- Provide draft contract for member agency review