The San Diego County Water Authority Experience with Delivery Methods

Santa Clara Valley Water District
Recycled Water Committee
July 19, 2016

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General Manager

San Diego County Water Authority

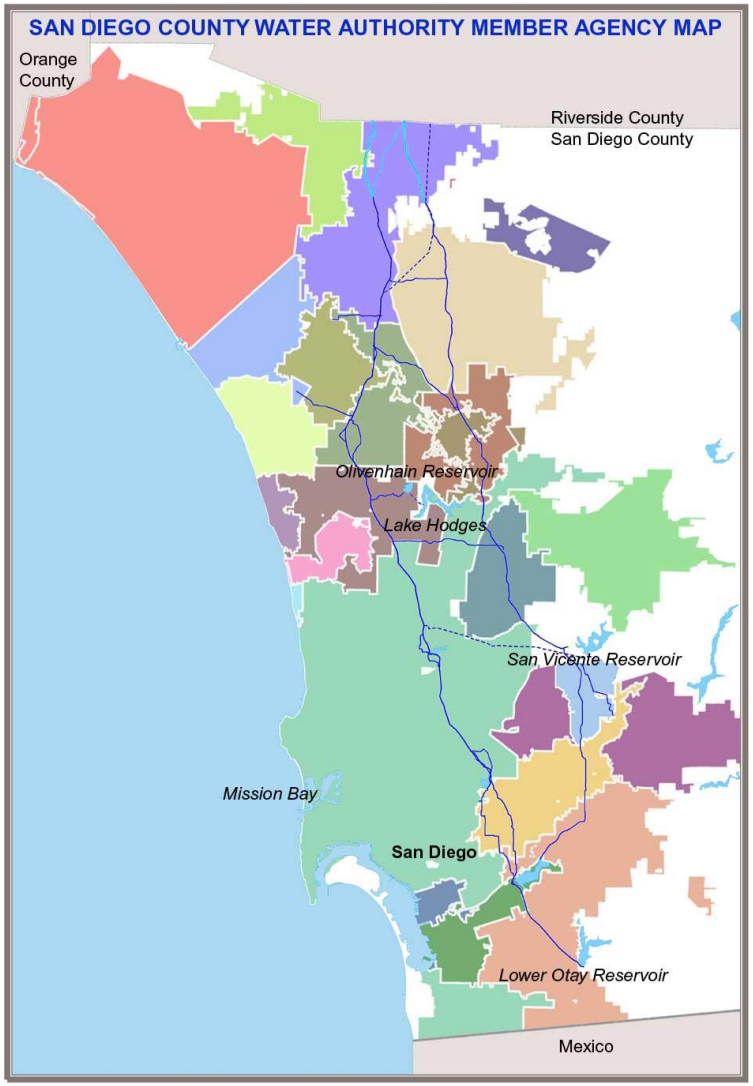
San Diego County Water Authority

Wholesale water agency created by State Legislature in 1944

- 24 member agencies
- 36-member board of directors
- Serves 3.2 million people and region's $218 billion economy

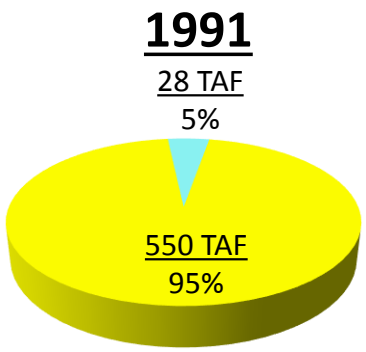
Imports 80%-90% of water used in San Diego County

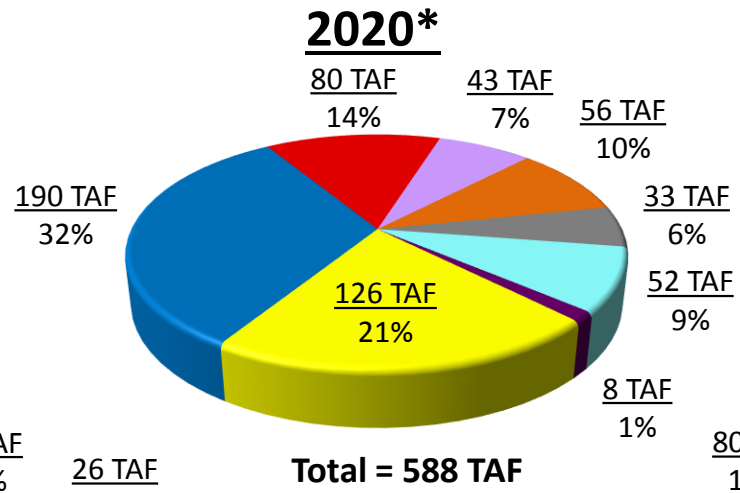
- Added desalinated seawater to local supply in late 2015
- Builds, owns, operates and maintains large-scale regional water infrastructure
- Largest member agency of Metropolitan Water District of Southern California

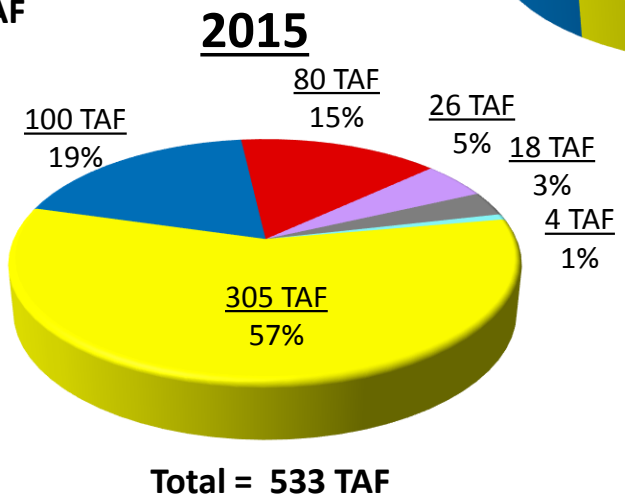


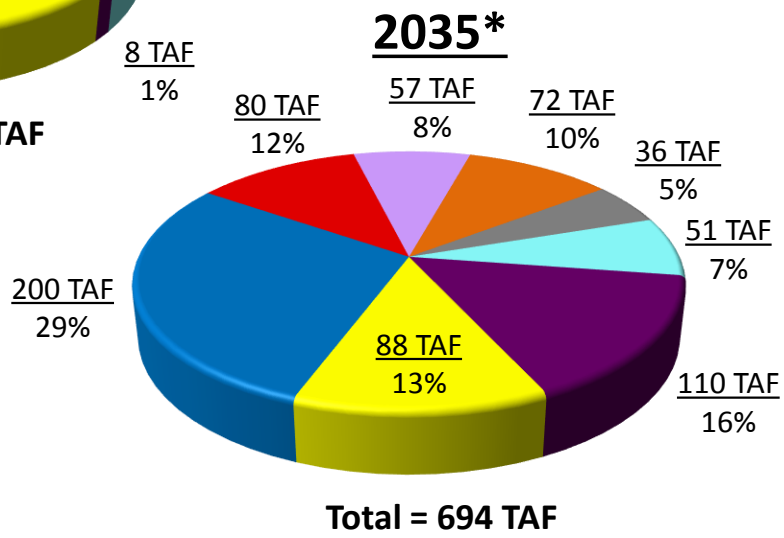
San Diego County Water Authority

Increasing San Diego County's Water Supply Reliability through Supply Diversification









Metropolitan Water District
All American & Coachella Canal Lining
Seawater Desalination
Local Surface Water
Imperial Irrigation District Transfer
Recycled Water
Groundwater
Potable Reuse

* Includes verifiable and additional planned local supply projects from 2015 UWMP

TAF=Thousand Acre-Feet

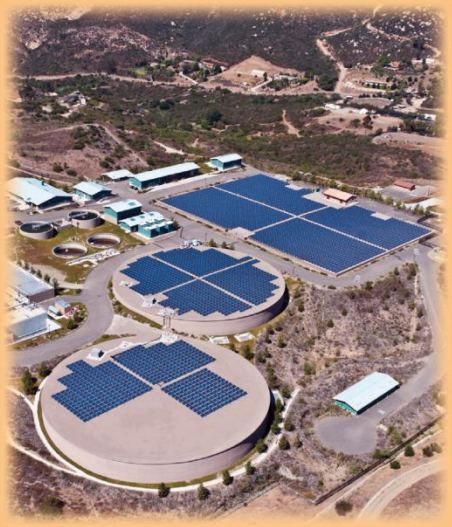
Historic Investments in Infrastructure

San Vicente Dam Raise & Related Projects
$816 million

Carlsbad Seawater Desalination Projects
$1 billion

Olivenhain Dam & Reservoir
$198 million

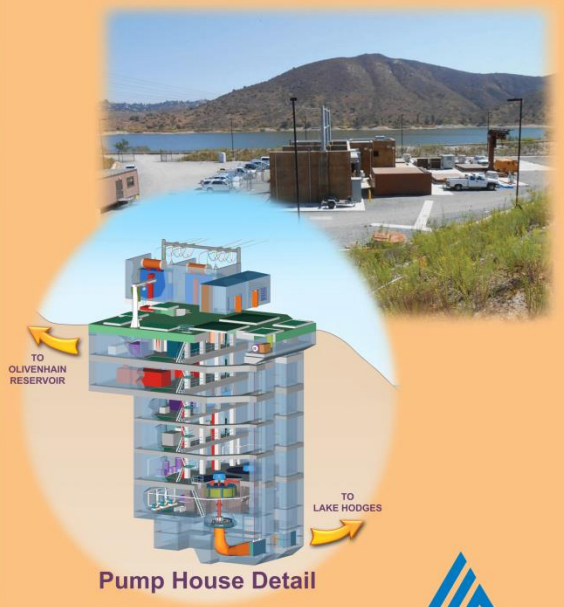
Twin Oaks Valley Water Treatment Plant
$179 million



All-American & Coachella Canal Lining Projects
$447 million
($190 million from Water Authority)

Pipeline Relining
$493 million

Lake Hodges Projects
$208 million



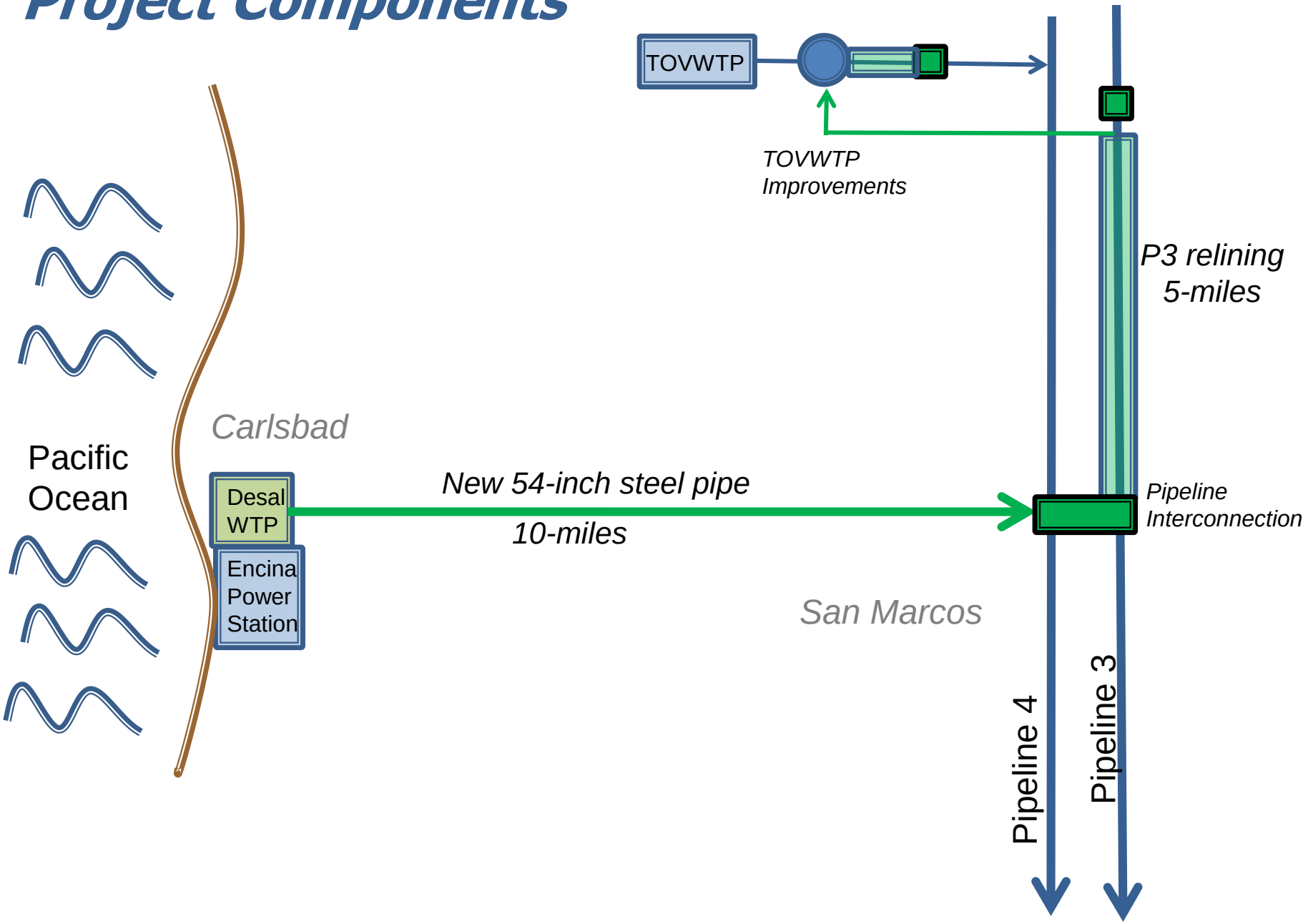
Pump House Detail

San Diego County Water Authority

Lewis Carlsbad Desalination Plant

- Owned and operated by Poseidon Water
- 30 year contract
- $1 billion investment
- 48,000-56,000 acre-feet/year of drought-proof supplies
- Largest, most advanced seawater desalination facility in North America
- On-line in December 2015

Project Components



Carlsbad Desalination Projects

Total Project Costs

Total Capital Cost

Total desalination plant	$537 million
Total conveyance pipeline	$159 million
Financing costs	$227 million
Water Authority improvements and oversight	$80 million
Total Capital Costs	**$1.003 billion**

2016 water purchase price* (includes pipeline)

*Current estimate based on highest electricity rate applicable

56,000 acre-feet per year	48,000 acre-feet per year
$2,131/AF	$2,367/AF

Project Financing Structure

- 82% funded through Bonds issued via the California Pollution Control Financing Authority
  - Plant Bonds issued as Tax-Exempt Private Activity Bonds with Poseidon as sponsor
  - Pipeline Bonds issued as Tax-Exempt Governmental Purpose Bonds with the Water Authority as sponsor
  - Bonds sold on December 24, 2012
  - Interest rate 4.78%
- 18% Cash Equity from Stonepeak Infrastructure

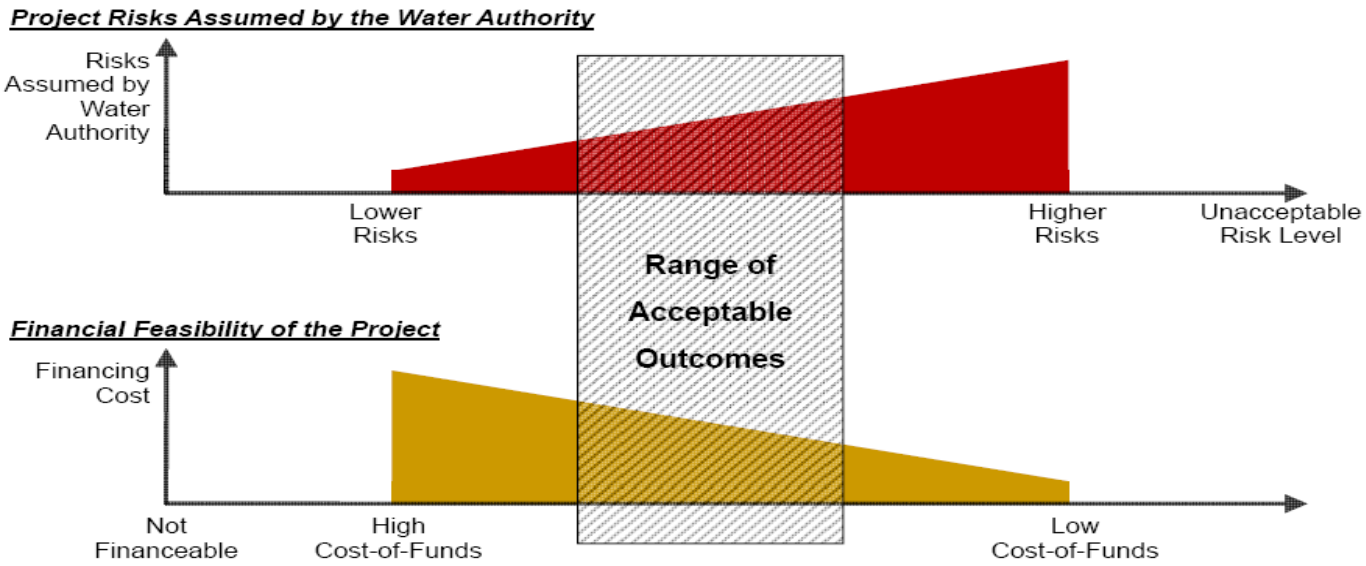
San Diego County Water Authority

Landmark Water Purchase Agreement between the Water Authority and Poseidon

- Water Authority Board approved WPA on Nov 29, 2012
- Outlines commercial and financial terms for production and delivery of water from the Lewis Carlsbad Desalination Project
- Transfers risk to private developer

Key Objective of WPA Balancing Price and Risk

- SDCWA had never constructed or operated a seawater desalination facility
- Assign appropriate risks to private developer at minimum cost to ratepayers



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Project Structure – Desalination Plant

- Developer/Owner
  - Poseidon Water
- Construction/Operation of the Plant
  - WPA between Water Authority and Poseidon
  - Contractor – Kiewit/Shea Desalination
  - IDE Technologies provided process technology
  - Plant Operations and Maintenance also provided by IDE

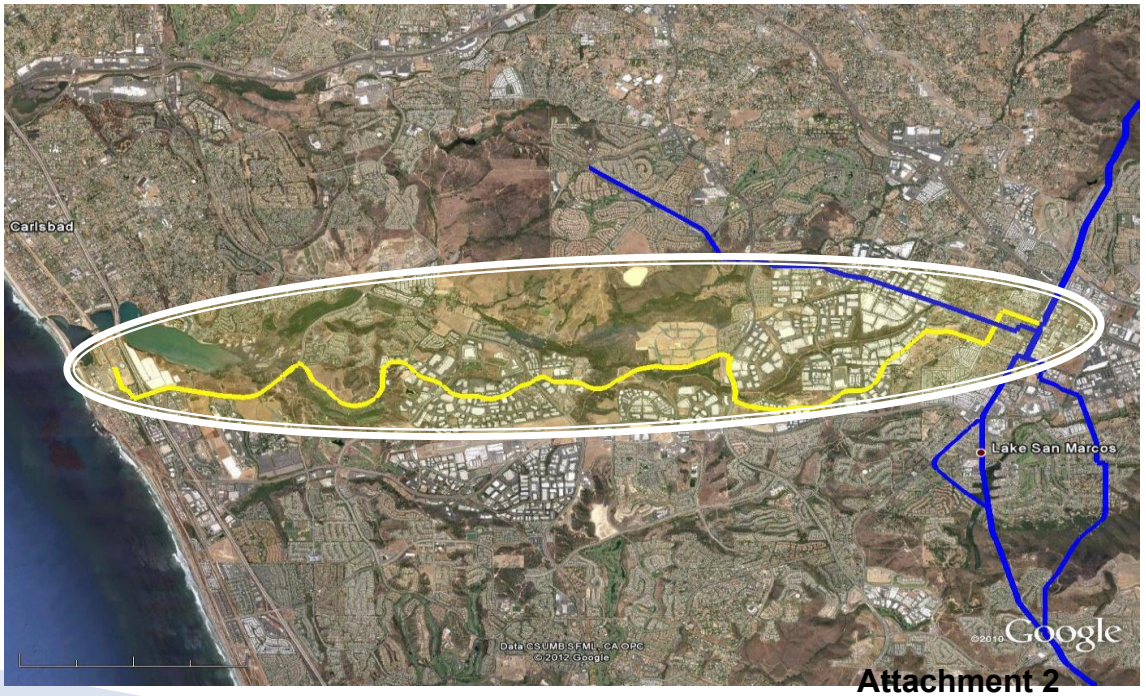
San Diego County Water Authority

Site Lease

- Poseidon long-term site lease arrangement with NRG, owner of the Encina Power Station
- Lease Area: 5.7 acres
  - Easements: 12 acres
- Lease Term: 35 years from start of commercial operation, plus two 10-year extensions
- Rent escalates with CPI

Project Structure – Conveyance Pipeline

- Owner/Operator
  - Water Authority
- Construction of Pipeline
  - Design-Build Agreement between Water Authority and Poseidon
  - Contractor – Kiewit Shea Desalination



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Project Risk Allocation

Risk Description	Poseidon & Investors	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)

San Diego County Water Authority

Risks Transferred

- Construction and Operating Cost Overruns
- Timely Project Completion
- Regulatory and Law Compliance
- Regulated or Differing Site Conditions
- Capital Maintenance, Repair and Replacement
- Labor Supply and Relations

San Diego County Water Authority

Risks Retained by Water Authority

- Changes in Law that affect all desalination plant operators or wastewater dischargers
- Cost of Intake Modifications due to expected power station closure *(also a change in law)*
  - Closure-related capital costs capped at $21.3million (indexed)
  - Closure-related operating costs capped at $2.7 million
- Uninsurable Force Majeure Events
- Unusual Raw Seawater Water Parameters (no additional compensation)
- Retained risks are “uncontrollable circumstances”

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Water Authority/ Poseidon Responsibilities

- Poseidon
  - Permit, Design, and Build the Desal Plant
  - Permit, Design, and Build the Conveyance Pipeline (design-build agreement)
  - Own, operate, and maintain the Desal Plant
  - Supply Product Water that meets water quality requirements
- Water Authority
  - Timely Construction of Required Aqueduct Improvements
  - Own, operate, and maintain the conveyance facilities
  - "Take or Pay" for Product Water, if it meets specifications (minimum commitment of 48,000 AF/Year)

San Diego County Water Authority

Water Purchase Payments

- Monthly, based on actual deliveries in acre-feet
- First 48,000 acre-feet per year paid at Fixed and Variable Price
- Next 8,000 acre-feet paid at Variable Unit Price
- If Poseidon does not deliver, Water Authority does not pay

San Diego County Water Authority

Price Increases Under WPA

- Unit costs set and can only increase consistent with WPA provisions
- Annual operating cost increases generally tied to rate of inflation
- Price may also increase due to unanticipated changes in law or regulations
  - Changes generally apply industry-wide
  - Cannot exceed 10% in single-year or maximum 30% increase over 30-year term

San Diego County Water Authority

Performance Guarantees

- Product Water Quality Guarantee
  - Compliance with all federal and state drinking water regulations
  - Additional standards for certain water quality parameters
- Minimum Product Water Delivery Guarantee
  - Annual supply to meet SDCWA demands (between 48,000 and 56,000 AF)
- Water Ordering Rights
  - Water Authority has rights to adjust delivery orders to reflect seasonal and daily demand changes

Termination & Purchase Options

- Purchase options at Water Authority sole discretion
- Convenience termination
  - Early buy-out provisions after 10 years
- End of term
  - $1 at end of 30-year term
- Event of default
  - Poseidon bankruptcy
  - Repeated violations of primary drinking water standards

San Diego County Water Authority

WPA – Ratepayer Protection

- ***Risk Transfer*** to Poseidon/Contractor team
- ***Price certainty*** throughout WPA term
- ***Buy-out provisions*** after 10 years of operation
- ***Transfer to public ownership*** at the end of the 30 year agreement

DBOOT Pros and Cons

- Pros:
  - Risk transfer to the private sector
  - Speed (design and construction can proceed concurrently)
  - A commodity purchase with defined terms and conditions
  - Performance guarantees
  - Approval rights over acceptance/performance testing
  - Debt is kept off the public agency balance sheet

- Cons:
  - Take or Pay contract
  - Higher cost of capital
  - Greater overall transactional complexity
  - Limited public agency input regarding design, construction and operations
  - Public agency does not have a direct relationship with contractors

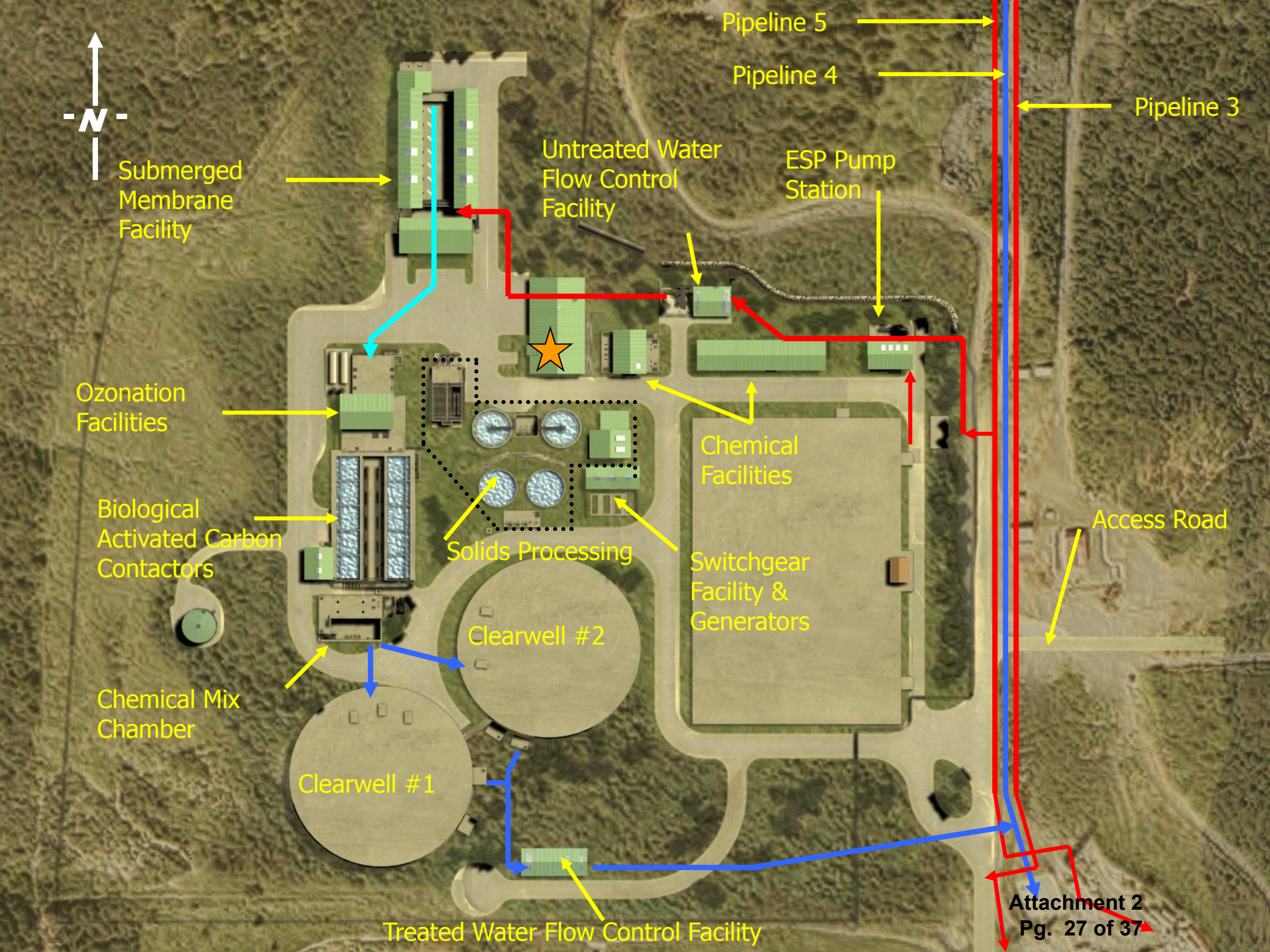
Design – Build – Operate Twin Oaks Valley Water Treatment Plant

San Diego County Water Authority

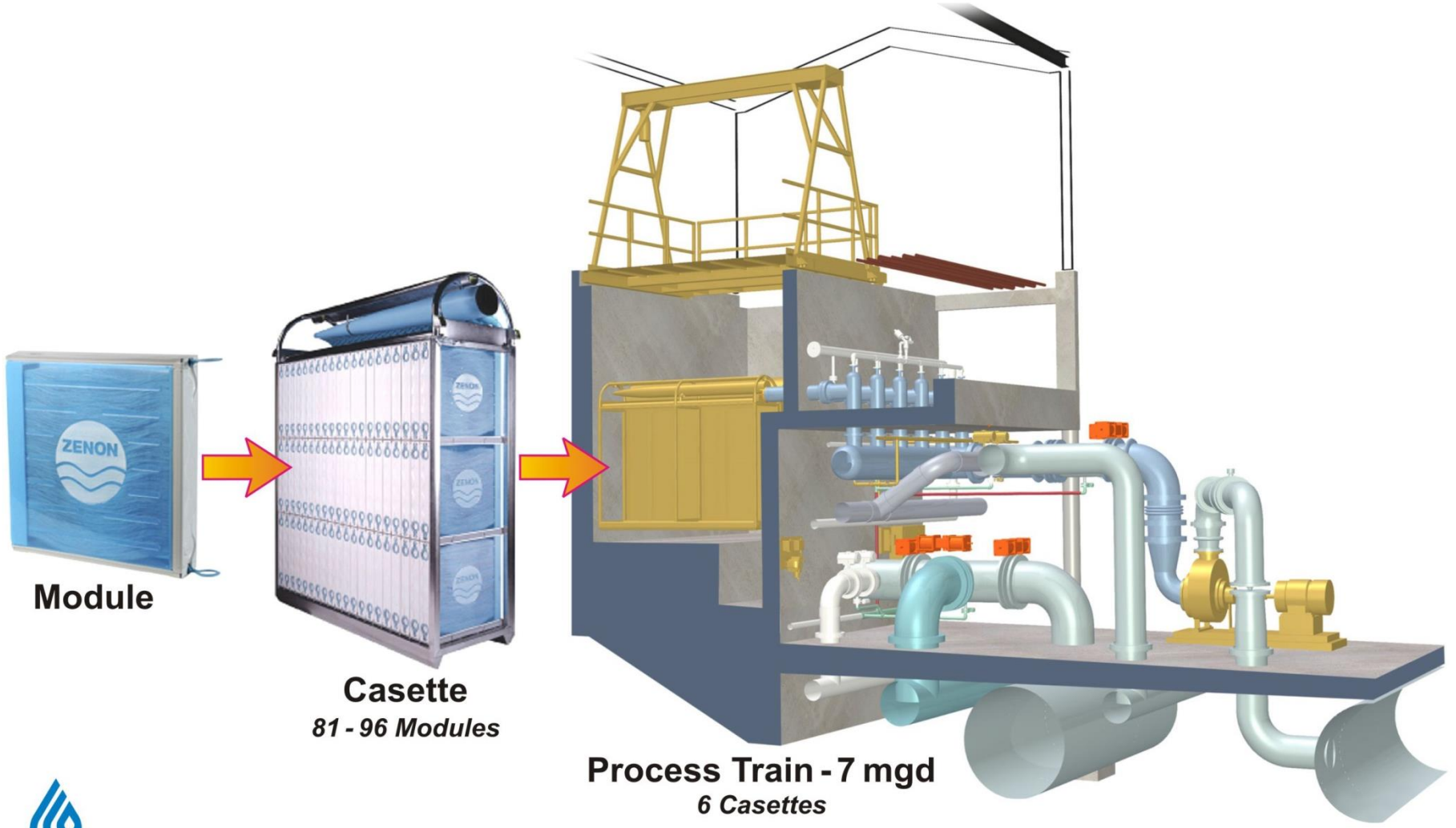
Twin Oaks Valley WTP

- 100 mgd submerged membrane WTP, ozone and biologically active carbon contactors
- Solids handling facilities, water control facilities, emergency power generators
- Environmentally-friendly project
- 15 years of O&M, with 5-year optional extension
- Fixed Design-Build Price = $157M
- Annual Service Fee = $7 million (2015)

San Diego County Water Authority


N
Pipeline 5
Pipeline 4
Pipeline 3
Submerged Membrane Facility
Untreated Water Flow Control Facility
ESP Pump Station
Ozonation Facilities
Chemical Facilities
Biological Activated Carbon Contactors
Solids Processing
Switchgear Facility & Generators
Access Road
Clearwell #2
Chemical Mix Chamber
Clearwell #1
Treated Water Flow Control Facility

Twin Oaks Valley Water Treatment Plant
Process Train



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Choosing an Alternative Procurement Method

- Why Design-Build-Operate over Design-Bid-Build?
  - Primary reason: Schedule
  - Secondary reason: Water Authority Engineering and O&M Experience is in Conveyance Facilities not Treatment

- Benefits:
  - Integration of designer/contractor/operator
  - Facilitates Use of Industry Expertise
  - Cost and Schedule Savings

San Diego County Water Authority

Use of Knowledgeable Advisors

- Owners Representative
  - DBO Solicitation and Award
  - Conceptual Designs and support
  - Management of DBO Contract
- Board of Senior Consultants
  - Experienced public owners
  - Industry experts
  - DBO procurement experts
- DBO attorney

San Diego County Water Authority

Project Timeline

RFQs	June –Aug 2004
SOQs	Aug – Sep 2004
Shortlist	Oct 2004
RFPs	Dec 2004 – May 2005
Initial Submittal	Feb 2005

San Diego County Water Authority

Project Timeline Cont'd

Proposals	May 2005
Negotiations	June – Aug 2005
BAFO	Aug 2005
Board Award	Sep 2005
Execute Contract/Design	Oct 2005

San Diego County Water Authority

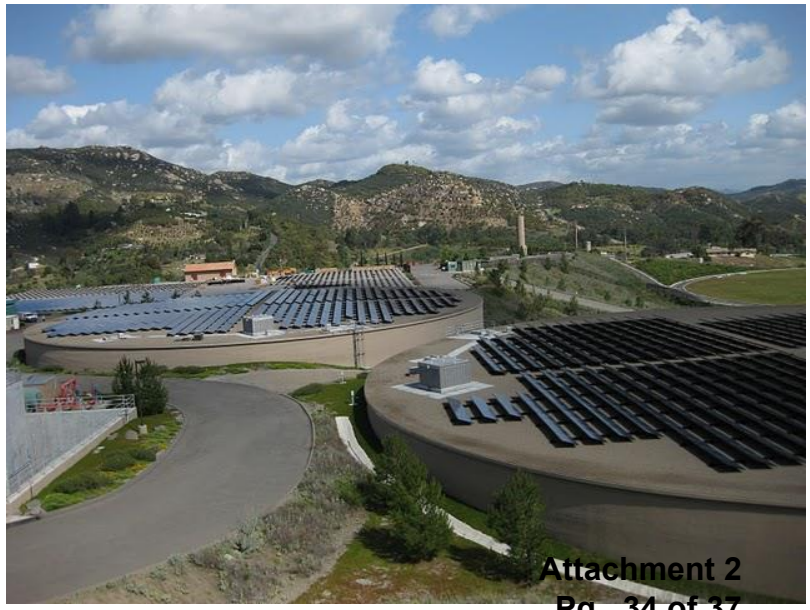
Project Timeline Cont'd

Construction begins	Feb 2006
Design Complete	Aug 2006
Substantial Comp.	April 2008
Acceptance Test	June 2008
Operations Period begins	June 2008

San Diego County Water Authority

Risks Transferred

- Construction and Operating Cost Overruns
- Timely Project Completion
- Capital Maintenance, Repair and Replacement
- Labor Supply, Costs and Relations
- Water quality
- Cost of chemicals
- Variation in water sales



Risks Retained

- EIR and Securing land
- Differing Site Conditions
- Raw water characteristics
- Changes in Law or Regulatory changes
- Power Consumption (Shared)

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Questions?

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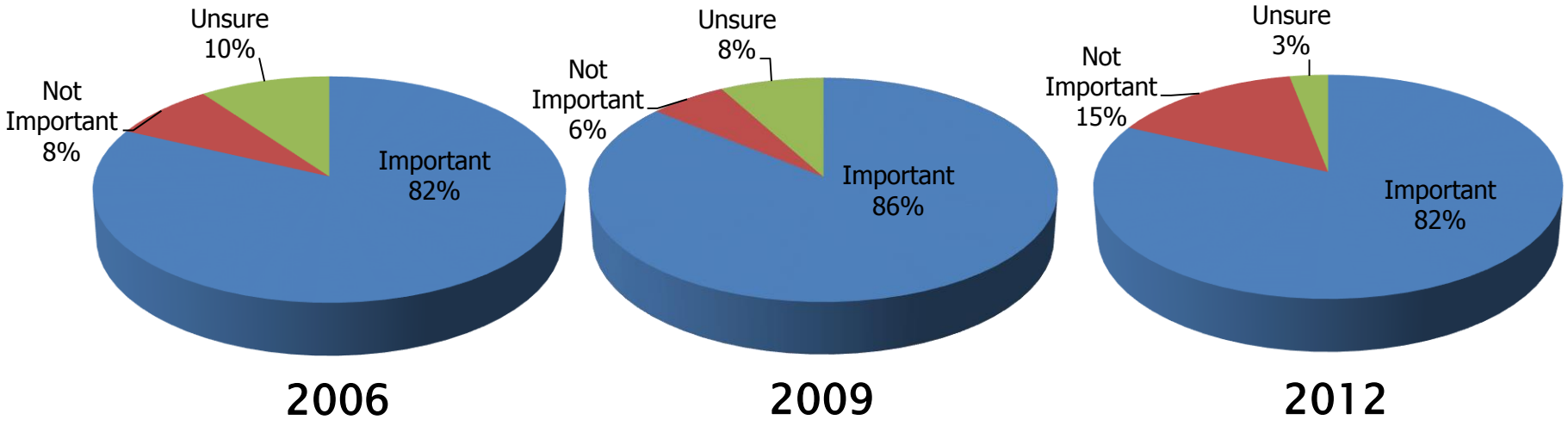
Consistently Strong Public Support
(Water Authority Public Opinion Polls)



Importance of Ocean Desalination to San Diego County's Water Supply Reliability

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