Claude “Bud” Lewis Carlsbad Desalination Plant

2018 CRWUA Conference

Maureen Stapleton
San Diego County Water Authority
San Diego County Water Authority

Wholesale water agency created by state Legislature in 1944
- Serves 3.3 million people and region’s $220 billion economy
- 24 member agencies (retailers)

Provides 80-90% of water used in San Diego County
- Builds, owns, operates and maintains large-scale regional water infrastructure
- Created largest ag-to-urban water conservation & transfer agreement in U.S.
- Invested more than $2.5 billion in facilities (desalination, pipelines, treatment and reservoirs) in the past 20 years
A Balanced Approach is Required for Water Reliability

- Provides more resiliency in times of shortages
- Protects economy and quality of life in San Diego County
The reduction in potable per capita water use since 1990 offsets the need for over 300,000 acre-feet per year within the region.
Increasing San Diego County's Water Supply Reliability through Supply Diversification

**1991**
- 28 TAF (5%)
- 550 TAF (95%)
- Total = 578 TAF

**2018**
- 79 TAF (15%)
- 41 TAF (8%)
- 27 TAF (5%)
- Total = 518 TAF

**2020***
- 80 TAF (15%)
- 56 TAF (10%)
- 43 TAF (8%)
- 16 TAF (3%)
- 33 TAF (6%)
- 8 TAF (2%)
- Total = 537 TAF

**2035***
- 72 TAF (11%)
- 57 TAF (9%)
- 16 TAF (2%)
- 36 TAF (6%)
- 51 TAF (8%)
- 10 TAF (2%)
- 110 TAF (17%)
- Total = 632 TAF

*Based on Interim Demand Forecast Reset and includes verifiable and additional planned local supply projects from 2015 UWMP (TAF=Thousand Acre-Feet)

**Legend:**
- **Yellow**: Metropolitan Water District
- **Blue**: Imperial Irrigation District Transfer
- **Red**: All American & Coachella Canal Lining
- **Brown**: Seawater Desalination
- **Light Blue**: Local Surface Water
- **Pink**: Recycled Water
- **Green**: San Luis Rey Water Transfer
- **Gray**: Groundwater
- **Purple**: Potable Reuse

**Notes:**
- All American & Coachella Canal Lining
- Imperial Irrigation District Transfer
- Metropolitan Water District
- Local Surface Water
- San Luis Rey Water Transfer
- Seawater Desalination
- Recycled Water
- Groundwater
- Potable Reuse

**Total = 578 TAF**

**Total = 518 TAF**

**Total = 537 TAF**

**Total = 632 TAF**

**Total = 8 TAF**
Why Ocean Desalination?

- New, local water supply
- Reduces need for imported water
- Drought-proof supply
- Improved water quality

- While more expensive than existing imported supplies, cost on par with other new, local water supplies
- Enhances regional supply reliability and local control
- Strong public support
- Complements water recycling
Lewis Carlsbad Desalination Plant

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

Pacific Ocean

Carlsbad

Encina Power Station

Desal WTP

New 54-inch steel pipe

10-miles

San Marcos

Pipeline 4

Pipeline 3

P3 relining 5-miles

TOVWTP Improvements

Pipeline Interconnection
Project Structure - Desalination Plant

- Water Purchaser
  - Water Authority is sole off-taker
- 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
Project Structure - Conveyance Pipeline

- **Owner/Operator**
  - Water Authority

- **Construction of Pipeline**
  - Design-Build Agreement between Water Authority and Poseidon
  - Contractor – Kiewit Shea Desalination (KSD)
  - Water Authority operates and maintains the pipeline
Landmark Water Purchase Agreement

- Water Authority Board approved WPA on Nov 29, 2012
- Outlines commercial and financial terms for production and delivery of water from the Carlsbad Desalination Project
- Transfers risk to private developer
  - Permitting
  - Design liability
  - Cost overruns
  - Operations
  - Must meet water quality requirements
- Buyout provisions after 10 years of operation and full transfer to public ownership at the end of the 30-year term
## Carlsbad | Project Risk Allocation

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Carlsbad Plant Energy Issues

- Power Consumption
  - CDP 5,000 kWh/AF (3,500 treat, 1,500 convey)
  - State Water Project 3,500 kWh/AF (includes treatment energy use)

- Net carbon neutral by offsetting greenhouse gas emissions
  - Purchase of carbon offsets
  - Energy recovery technology
    - Saves 116 million kilowatt-hours of energy per year
    - 98% Efficient
  - Restoring 66 acres of coastal wetlands
  - Preserving 400-acre Agua Hedionda Lagoon
The Carlsbad Project: A Successful Public Private Partnership (P3)

- **Risk Transfer** to Poseidon/Contractor team
- **Price certainty** throughout Water Purchase Agreement term
- **Buy–out provisions** after 10 years of operation
- **Transfer to public ownership** at the end of the 30 year agreement
Stay in Touch with the Water Authority

sdcwa.org/mobile-news-app

www.sdcwa.org
Carlsbad | Project Setting

1/13/19

Mouth of Lagoon

Discharge Channel

Intake Channel