

WELCOME

8TH ANNUAL CA WATER DATA SUMMIT

INTELLIGENT QUESTIONING (IQ) SHARING WATER WISDOM

SEPTEMBER 7&8, 2023



STANFORD UNIVERSITY | PALO ALTO, CA

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DAY ONE
9AM - 10AM

LAYING THE GROUNDWORK FOR INTELLIGENT COMMERCIAL, INDUSTRIAL & INSTITUTIONAL (CII) BENCHMARKING

MODERATOR



Stephanie Nevins

Water Conservation Supervisor,
Alameda County Water District



Kim O'Cain

Member Experience Specialist,
California Data Collaborative



Gabriel Peredo

Senior Director of Los Angeles
Operations, Richard Health &
Associates, Inc.



Martha Wright

Conservation Manager,
San Antonio Water System

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CaWaterDataSummit.org

[#CAWaterDataSummit](https://twitter.com/CAWaterDataSummit) [#IntelligentQuestioning](https://twitter.com/IntelligentQuestioning)

Moderator: Stephanie Nevins



Stephanie is passionate about creative yet pragmatic data-driven solutions for water conservation and other environmental issues. She currently leads Alameda County Water District's (ACWD's) Water Conservation Team, and over the last 18 years has expanded and reinvented ACWD's program to improve water use efficiency for all customers in the community, even those hardest to reach. Prior to leading the ACWD Water Conservation Team, Stephanie worked for several technology startups until her passion for helping communities live and work in a more sustainable way redirected her toward public service in resource conservation. She has a Bachelor of Arts in Political Science from UC Berkeley and a Master of Science in Environmental Management from University of San Francisco.

Panelist: Kim O'Cain



Kim O'Cain is the Member Experience Specialist for the California Data Collaborative and an Adjunct Professor at Santa Monica College teaching water and sustainability courses. She has over twenty years of experience developing and implementing water conservation programs, policies, and outreach to public agencies and businesses. Kim wrote the DWR MWELO Guidebook.

Panelist: Gabriel Peredo



Gabriel is an electrical engineer with over 21 years of experience. As a Senior Director at RHA, Gabriel leads the development and execution of energy efficiency, water conservation and construction management programs on behalf of utility, government, school district, industrial and institutional clients in Southern California. Overseeing more than 40 employees, Gabriel is a highly effective leader and mentor with extensive technical expertise. He is skilled at cultivating well-trained and performance-focused teams to deliver quality services that improve lives, enhance communities and protect the environment.

Panelist: Martha Wright

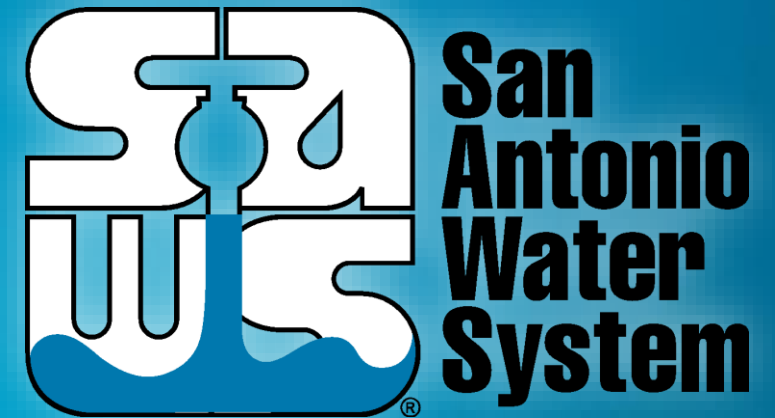


A Southern California native, Martha grew up understanding the importance of water conservation. After earning a B.S. in Environmental Science and an M.B.A. specializing in Data Analytics, she began working as an analyst on energy efficiency research followed by water conservation. She now serves as Conservation Manager at San Antonio Water System (SAWS), leading Conservation efforts on the utility's ConnectH2O AMI Programs. Having an interest in all things water and a passion for sustainability, Martha enjoys finding new ways to look at data that will help improve water conservation programs for customers and the utility.

CI Benchmarking

Martha Wright
Conservation Manager

CA Water Data Summit
September 7, 2023

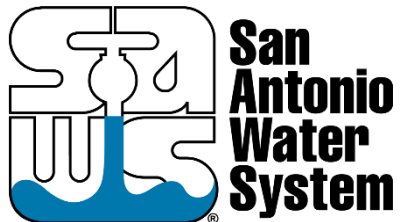
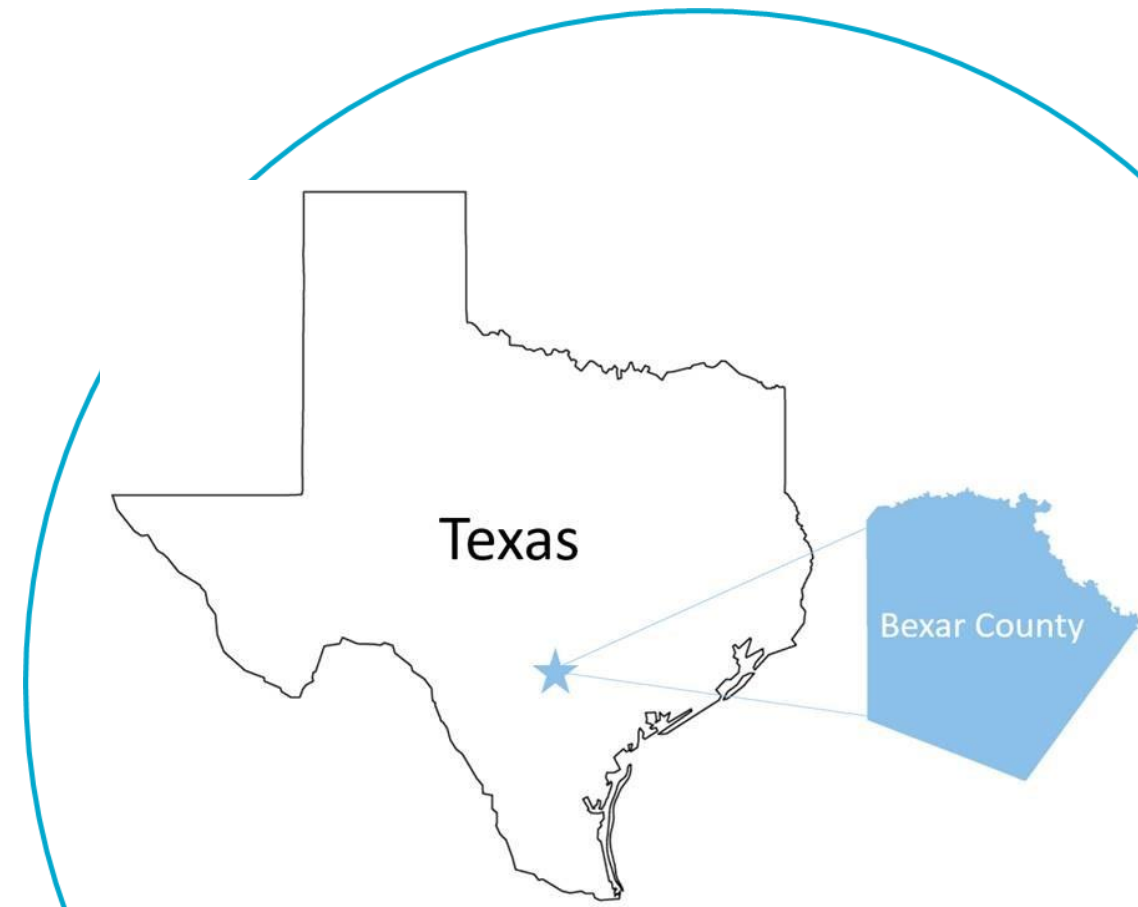


MAKING SAN ANTONIO
WATERFUL



San Antonio Water System

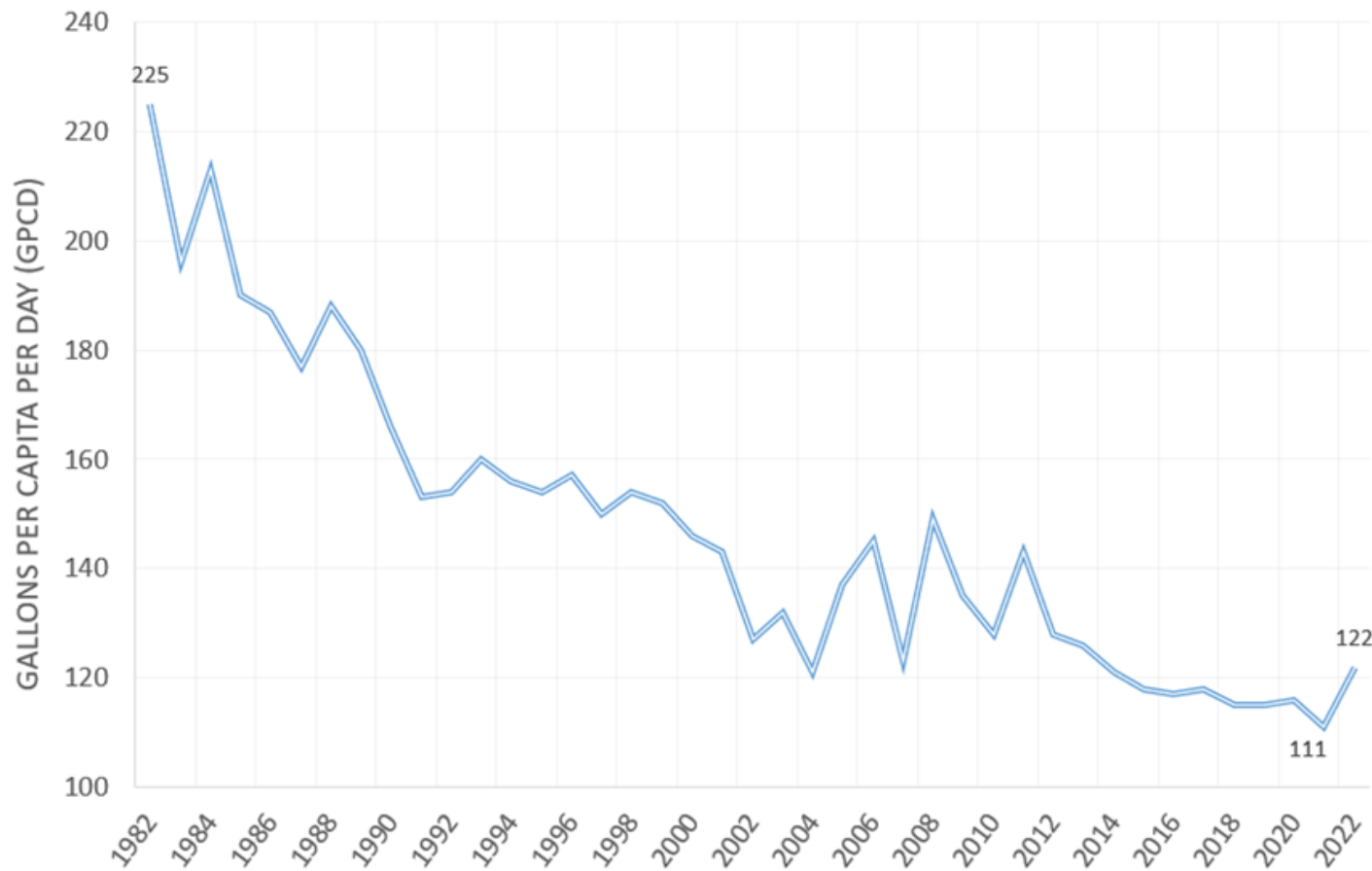
- Over 2 million served water & wastewater
- Produce and deliver water
- Nearly 600,000 accounts
- Diverse Customer Base
 - 71% volume residential (indoor & outdoor)
 - 23% volume commercial/industrial
 - 6% volume commercial landscape irrigation
- Conservation Drivers
 - Fast growing region
 - Drought prone with strict aquifer regulations
 - Part of San Antonio culture





Conservation in San Antonio

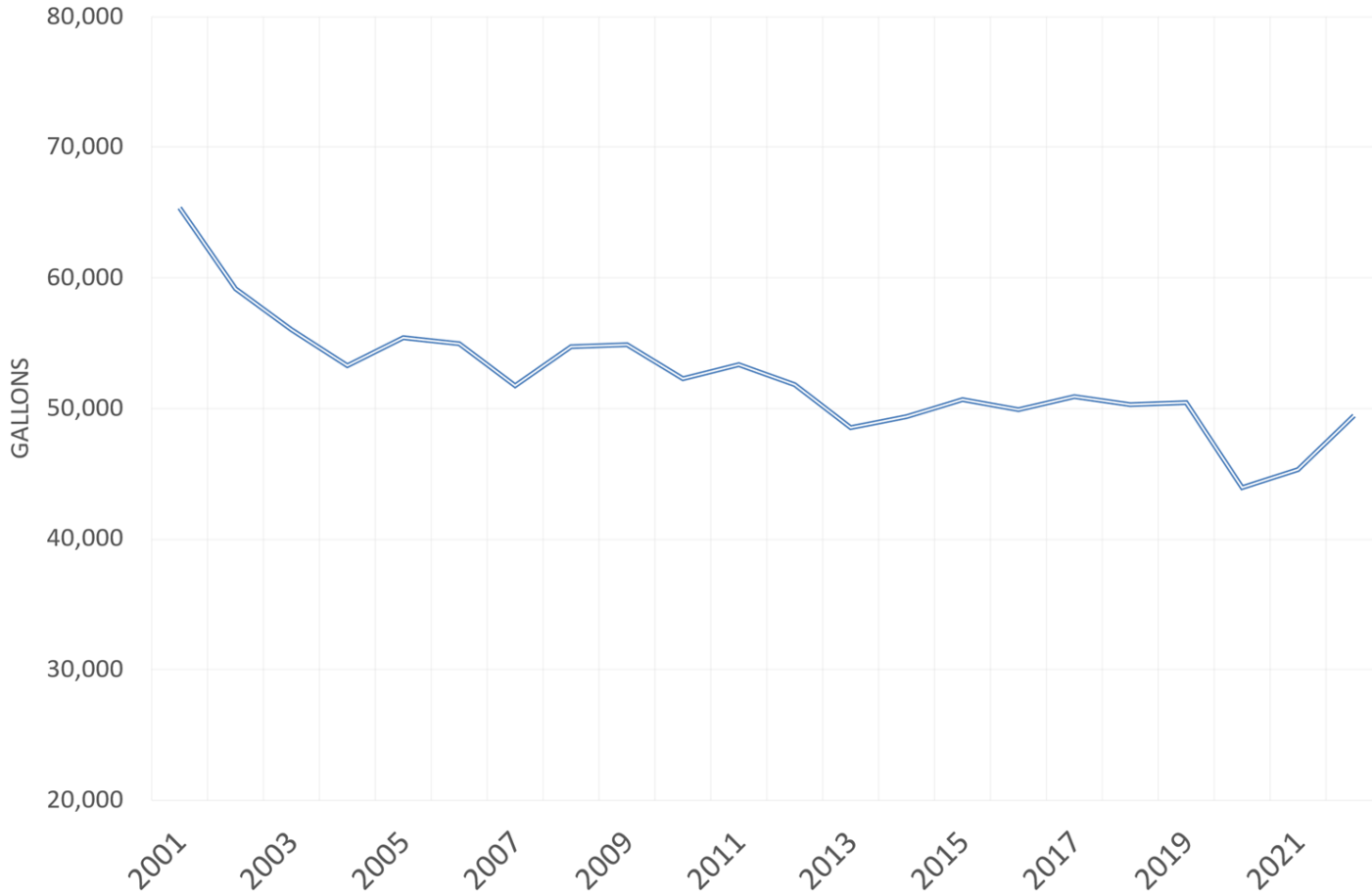
TOTAL GPCD



- Conservation efforts began in the early 1990's
- Three focuses:
 - Education
 - Incentives
 - Reasonable Regulation
- CII Classification will focus on education and incentives

Why Classify CII Customers?

MONTHLY USE PER BILL
COMMERCIAL, INDUSTRIAL, AND MUNICIPAL



Note: No regulation, mandate, or structure for coding CII in Texas

How we Coded 40,000+ Accounts

- Decide on a strategy
 - Coded with 6-digit NAICS codes based on primary water use at property
 - Storing the data in our CRM (Salesforce)
- Then decide where to start
 - Our goal was to code as many accounts and as much water as possible

236210

Sector

Subsector

Industry Group

Industry

National Industry

23 = Construction

2362 = Nonresidential Building Construction

236210 = Industrial Building Construction

Using the Data

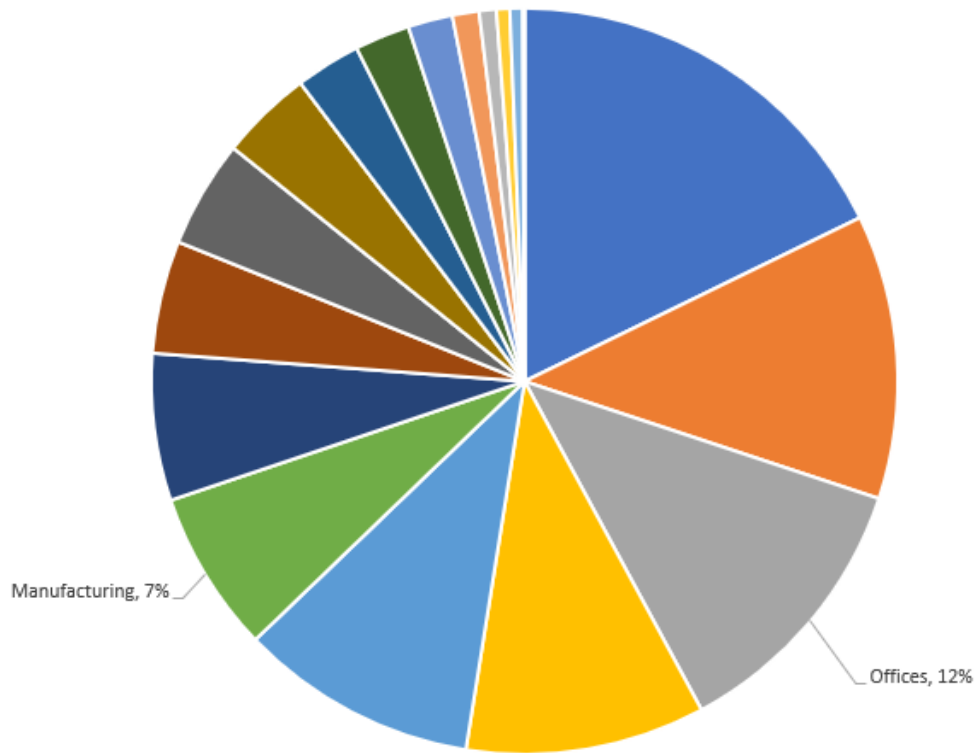
Example: Number of 6-digit NAICS codes included within each roll-up category

- Manufacturing: 428
- Offices: 137
- Services: 88
- Vehicle Wash: 1

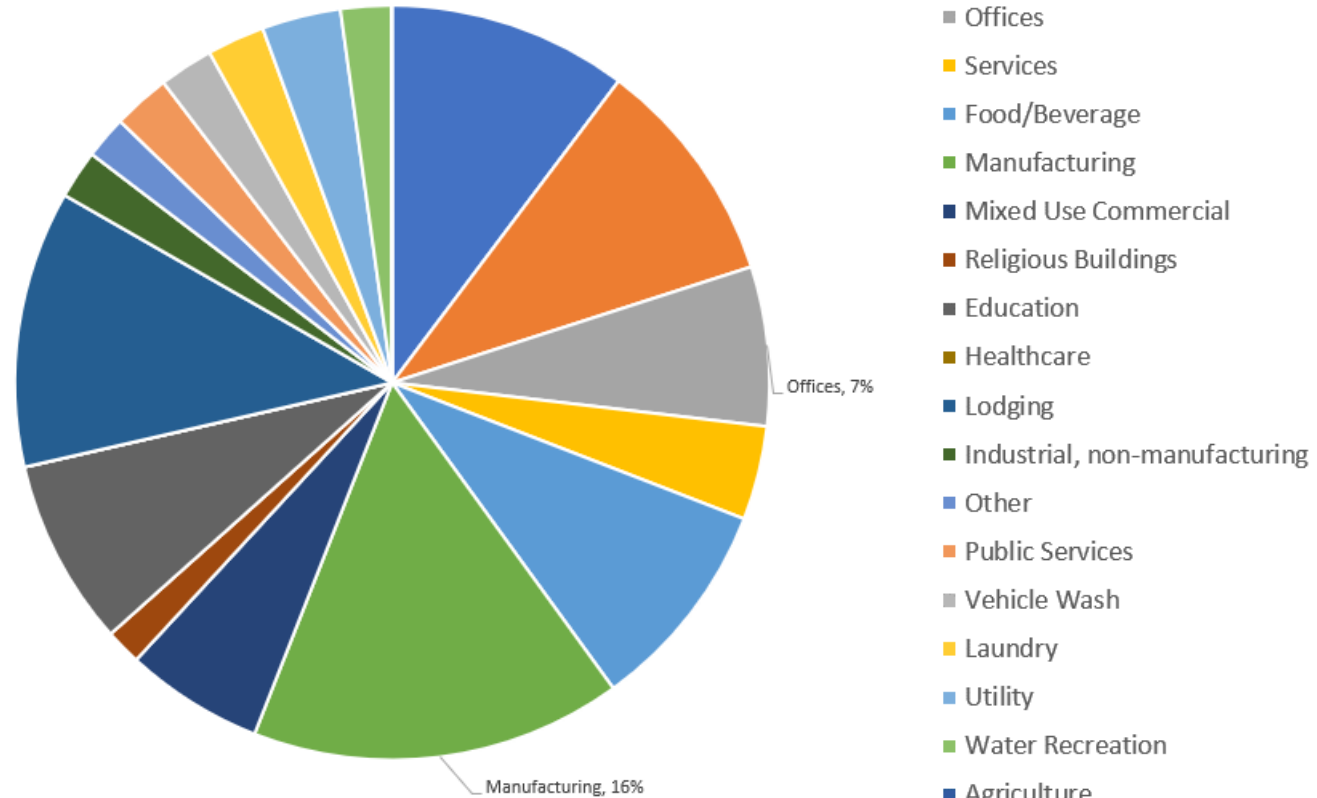
NAICS Code	2017 NAICS US TITLE	Category
236115	NEW SINGLE-FAMILY HOUSING CONSTRUCTION (EXCEPT FOR-SALE BUILDERS)	Manufacturing
236116	NEW MULTIFAMILY HOUSING CONSTRUCTION (EXCEPT FOR-SALE BUILDERS)	Manufacturing
236117	NEW HOUSING FOR-SALE BUILDERS	Manufacturing
236118	RESIDENTIAL REMODELERS	Manufacturing
236210	INDUSTRIAL BUILDING CONSTRUCTION	Manufacturing
236220	COMMERCIAL AND INSTITUTIONAL BUILDING CONSTRUCTION	Manufacturing
...
721110	HOTELS (EXCEPT CASINO HOTELS) AND MOTELS	Lodging
721120	CASINO HOTELS	Lodging
721191	BED-AND-BREAKFAST INNS	Lodging
721199	ALL OTHER TRAVELER ACCOMMODATION	Lodging
721211	RV (RECREATIONAL VEHICLE) PARKS AND CAMPGROUNDS	Lodging
721214	RECREATIONAL AND VACATION CAMPS (EXCEPT CAMPGROUNDS)	Lodging
721310	ROOMING AND BOARDING HOUSES, DORMITORIES, AND WORKERS' CAMPS	Lodging
722310	FOOD SERVICE CONTRACTORS	Food/Beverage
722320	CATERERS	Food/Beverage
722330	MOBILE FOOD SERVICES	Food/Beverage
722410	DRINKING PLACES (ALCOHOLIC BEVERAGES)	Food/Beverage
722511	FULL-SERVICE RESTAURANTS	Food/Beverage
722513	LIMITED-SERVICE RESTAURANTS	Food/Beverage
722514	CAFETERIAS, GRILL BUFFETS, AND BUFFETS	Food/Beverage
722515	SNACK AND NONALCOHOLIC BEVERAGE BARS	Food/Beverage
811111	GENERAL AUTOMOTIVE REPAIR	Services
811112	AUTOMOTIVE EXHAUST SYSTEM REPAIR	Services
811113	AUTOMOTIVE TRANSMISSION REPAIR	Services
811118	OTHER AUTOMOTIVE MECHANICAL AND ELECTRICAL REPAIR AND MAINTENANCE	Services
811121	AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE	Services
811122	AUTOMOTIVE GLASS REPLACEMENT SHOPS	Services
811191	AUTOMOTIVE OIL CHANGE AND LUBRICATION SHOPS	Services
811192	CAR WASHES	Vehicle Wash
811198	ALL OTHER AUTOMOTIVE REPAIR AND MAINTENANCE	Services
811211	CONSUMER ELECTRONICS REPAIR AND MAINTENANCE	Services

Is 19 roll-up categories “right”?

Count of Accounts by Category



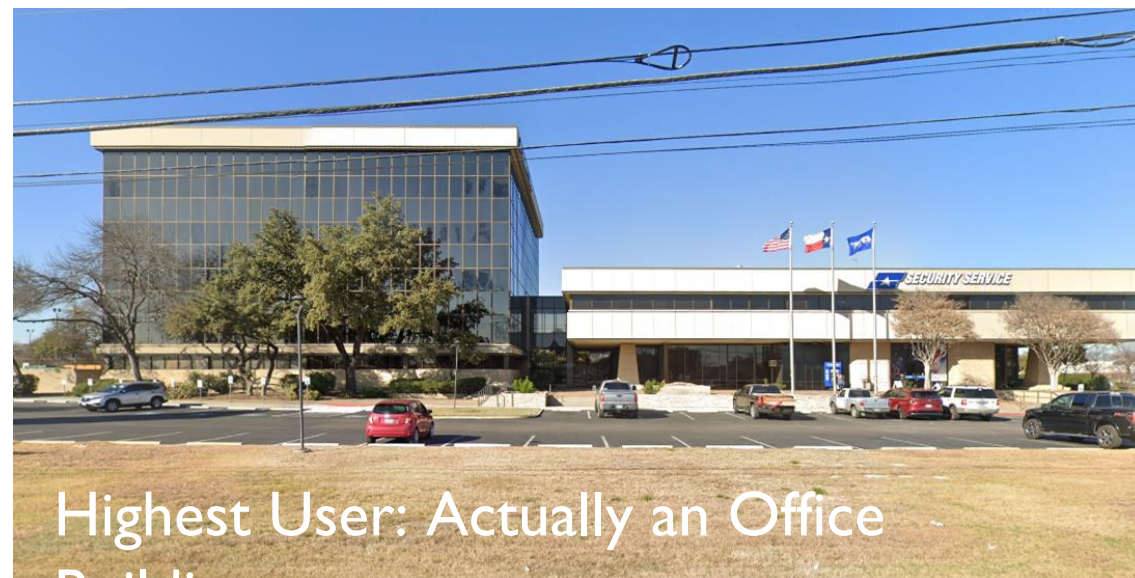
Usage of Accounts by Category



- Sales
- Recreation, non-water
- Offices
- Services
- Food/Beverage
- Manufacturing
- Mixed Use Commercial
- Religious Buildings
- Education
- Healthcare
- Lodging
- Industrial, non-manufacturing
- Other
- Public Services
- Vehicle Wash
- Laundry
- Utility
- Water Recreation
- Agriculture

First targeted incentives planned for.... Banks?

- Pulled any accounts with a code starting with 5221
 - 522110: Commercial Banking
 - 522120: Savings Institutions
 - 522130: Credit Unions
- Target Top Users by Location
- Education: Inform customers
- Incentives: Offer programs to help decrease use



Highest User: Actually an Office Building

Going forward...



**Ongoing
Coding**
(it's a never
ending process!)



**Using Data
Beyond
Conservation**



**Continue
Education &
Incentives**
(starting with banks)

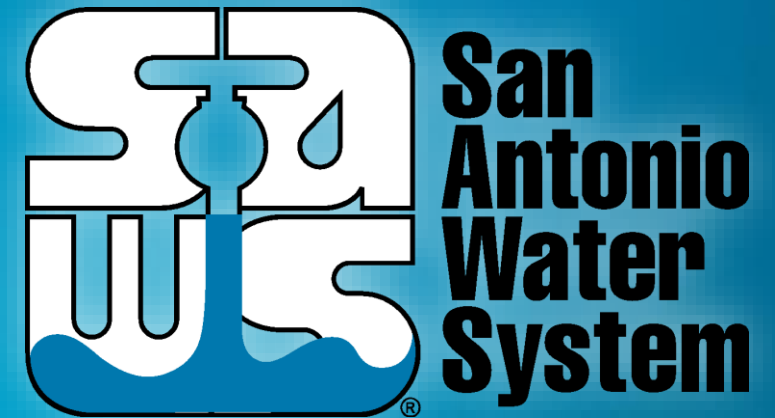
Going forward...



CI Benchmarking

Martha Wright
Conservation Manager

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MAKING SAN ANTONIO
WATERFUL 

Lessons From the Benchmarking Frontline

Kim O'Cain
California Data Collaborative
Sept 7, 2023



Benchmarking for Water Self-Sufficiency

City of Santa Monica's Water Neutrality Ordinance



What is Water Neutrality?

Caps water use and sets a water budget



Then: 24-hour restaurant



Now: 100 unit mixed-use development
with 7,000 sf retail space

Why Water Neutrality?

- Stop importing water
- NOT undermine the water conservation efforts started in 1980s with hundreds of new mixed-use developments and remodels
- Drive innovative water-efficient designs for new construction and remodels
- **Use benchmarking to estimate demand, set budget, track demand and performance**



The Potential of Benchmarking

- Improve water demand & supply forecasting
- Improve property & facilities management
- Improve water efficiency programs
- Improve building code standards/regulations
- Promote innovation in design, construction, maintenance, management



How Far Down the Rabbit Hole to Go for Water Neutrality?

Estimate Demand and Set Water Budget for Billing

- Indoor Water Use + Outdoor Water Use = Total Demand
- Water Use by specific types of property/business and attributes
- Water Use by square footage
- Estimate vs Actual

Example: Mixed-use Development

Indoor Use = toilets, showers, clothes washers, etc. for each unit + gym + retail space use + **Outdoor** = plants, irrigation, pool



Compare Honeycrisps to Honeycrisps

Data Challenges

1. **No water benchmarking data!**
2. Billing system limitations for segmentation
3. New construction calculations vs remodel calculations
4. Architects, engineers, plumbers didn't "actually" know how to calculate water demand during design
5. Excel spreadsheets
6. Limited staffing



Benchmarking Wish List

Collaboration, Innovation, Resiliency

1. Water industry creates a standardized list of water user categories
2. Billing system providers upgrade systems to include this list
3. Water agencies segment customers in billing systems
4. Data sharing of usage for research
5. Data visualization tools
6. Data-driven management for supplies and efficiency programs
7. Customer's become water managers



Data Solutions



Collaborators

- Members
- Water Agencies
- Tech Companies
- Researchers
- Non-profits
- Consulting Firms
- Grantors

California Data Collaborative

The CaDC is governed by member water suppliers whose collaboration and dues pave the way to develop data-driven tools, resources, research, and best practices to address issues that affect the entire water industry.



Collaboration

Our members actively participate in committees and workshops to solve mutual challenges



Software

One low-cost software tool to support data analysis, water budgeting, report generation, and program evaluation.



Projects

Our members benefit from customized projects to harness their data to meet their specific needs



Research

Our members drive research with a network of global research institutions and professionals

CaDC Analytics Platform v2.0

Customers > CII > Commercial

Service ID [REDACTED]

Account #: 65078 **Total Rooms: 169** Class: I1 Segments Disclosable Hotel

+ ADD TO SEGM

The screenshot displays the CaDC Analytics Platform v2.0 interface for a commercial customer. The breadcrumb trail is 'Customers > CII > Commercial'. The 'Service ID' is redacted. The 'Account #' is 65078. The 'Total Rooms' is 169, which is circled in red. Other details include 'Class: I1', 'Segments', 'Disclosable', and 'Hotel'. There is an 'ADD TO SEGM' button. Below the text are three images: a street-level view of the hotel entrance, an aerial view of the property with a pool, and a map of the surrounding area with various landmarks like 'Renaissance Sports Club' and 'Citrus Fresh Grill'.

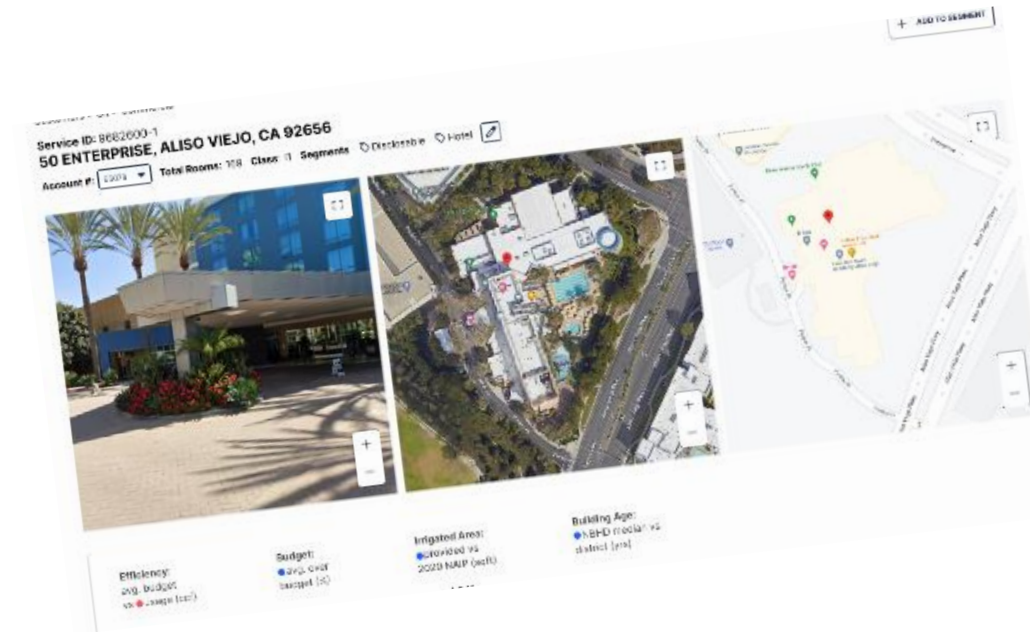
CaDC Analytics Software - Segmenting Customers

CII DIM Guidebook Project



Collaboration to develop a guide for identifying dedicated irrigation meters and landscape area measurements using available data sources to meet Water Use Objective:

- Identify and measure CII landscapes for several SDCWA member agencies
- Document process and work with CalWEP to develop a guidebook for the water community



CaDC Members get access to data scientists to develop customized projects to address specific data needs. Learn more at www.thecadc.org

How Do We Collaborate for Benchmarking?



Kim O'Cain

kim@thecadc.org

www.thecadc.org

Building Energy Benchmarking
California Water Data Summit
September 7, 2023

Gabriel Peredo
Senior Director of
Los Angeles Operations



RHA Introduction



Founded in 1980



Over 200 Employees



**Serving Commercial,
School and Residential
Customers**



**Innovative
Program Design**



**Delivering Energy
Efficiency Solutions**

Building energy Benchmarking Program

What is this program about?

- ▶ California Energy Commission requires owners of large commercial and multifamily buildings over 50,000 sq ft. to report energy use.
- ▶ **Goal:** to publicly disclose the energy use of building and reveal level of efficiency



*There are exemptions to the reporting requirements. Please visit the California Energy Commission website for more information:
<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-benchmarking-program/building-energy-benchmarking>



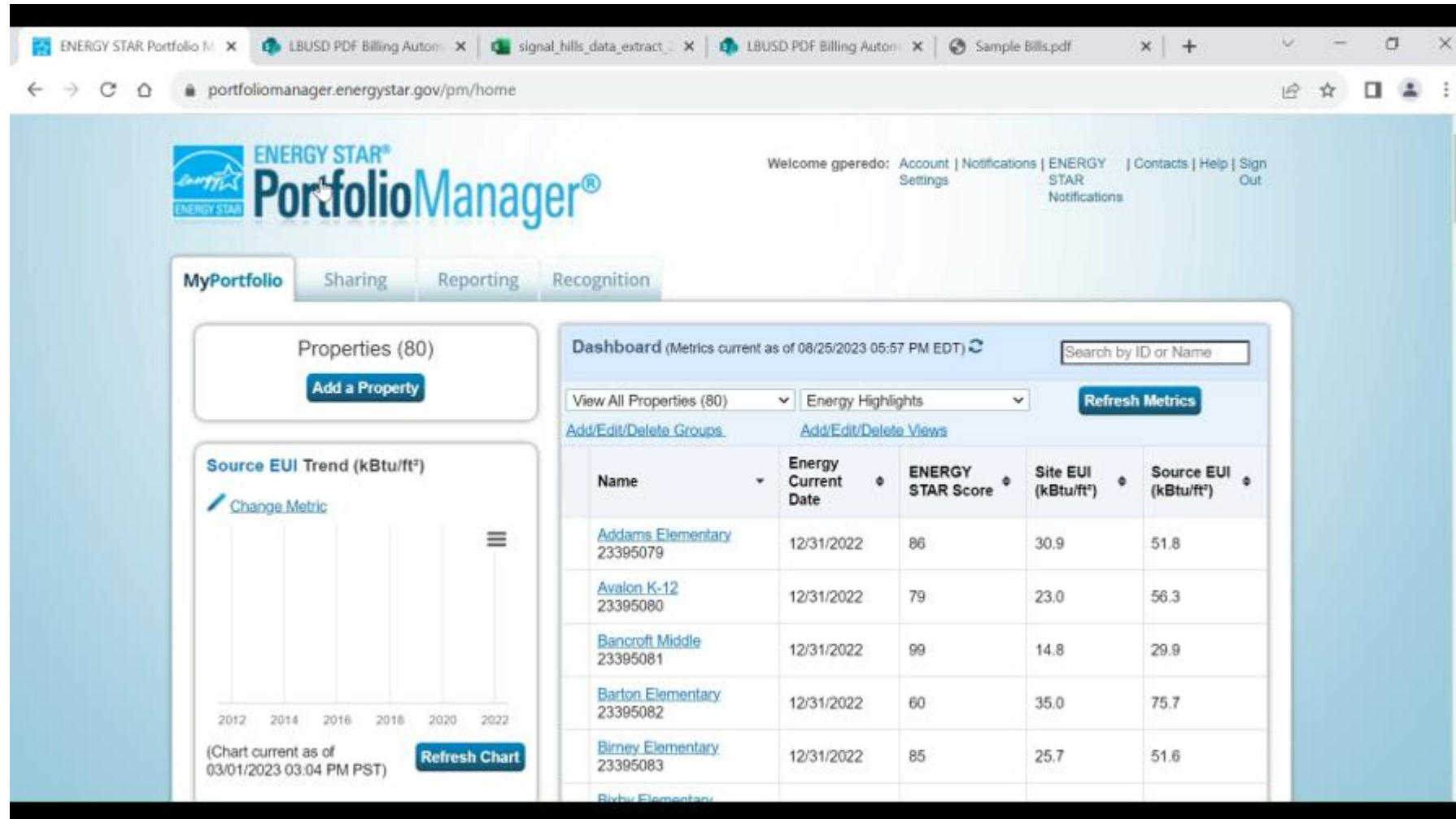
Where does the data come from?

- **Electricity, gas and water billing data for 1 full year:**
 - Account numbers
 - Meter numbers
 - Billing period
 - Usage
 - Costs
 - Number of bills

- **Gathered from utility's online portal, application programming interface (API) or hard copy**



Star Benchmarking Tool LBUSD Example



The screenshot displays the Energy Star Portfolio Manager interface. At the top, the navigation bar includes the Energy Star logo and the text "PortfolioManager". A user menu is visible with options: "Welcome gperedo: Account Settings", "Notifications", "ENERGY STAR Notifications", "Contacts", "Help", and "Sign Out".

The main content area is divided into several sections:

- MyPortfolio**: Includes tabs for "Sharing", "Reporting", and "Recognition".
- Properties (80)**: A section with an "Add a Property" button.
- Source EUI Trend (kBtu/ft²)**: A line chart showing energy usage trends from 2012 to 2022. The chart is currently set to "Source EUI" and has a "Refresh Chart" button. The data is current as of 03/01/2023 03:04 PM PST.
- Dashboard**: A central section with a search bar "Search by ID or Name", a "Refresh Metrics" button, and filters for "View All Properties (80)" and "Energy Highlights".
- Table**: A table listing properties with columns for Name, Energy Current Date, ENERGY STAR Score, Site EUI (kBtu/ft²), and Source EUI (kBtu/ft²).

Name	Energy Current Date	ENERGY STAR Score	Site EUI (kBtu/ft ²)	Source EUI (kBtu/ft ²)
Addams Elementary 23395079	12/31/2022	86	30.9	51.8
Avalon K-12 23395080	12/31/2022	79	23.0	56.3
Bancroft Middle 23395081	12/31/2022	99	14.8	29.9
Barton Elementary 23395082	12/31/2022	60	35.0	75.7
Birney Elementary 23395083	12/31/2022	85	25.7	51.6
Birney Elementary 23395084	12/31/2022	85	25.7	51.6

Benchmarking Process Overview



Lessons learned



Benchmarking is all about the data, which may be:

- Available only in hard copy
- Incomplete
- Inaccurate



First year is the hardest (establishing baseline template)

Second year templates are established and property information entered



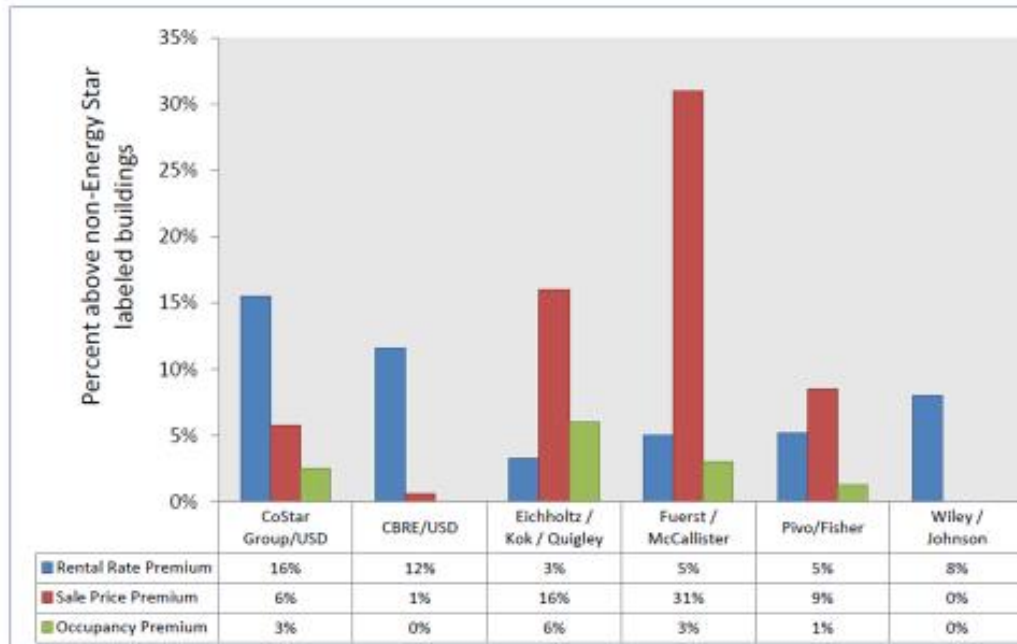
Tool helps prioritize efforts to improve efficiency and provides transparency



Implementing a multi-year master plan improves efficiency and reduces operating costs

The Overall Value of ENERGY STAR Certification for Commercial Buildings

The Market Value of ENERGY STAR Certified Buildings



Source: [Benchmarking and Disclosure: Lessons from Leading Cities](#), based on data from the [Institute for Market Transformation](#)

Q&A



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