

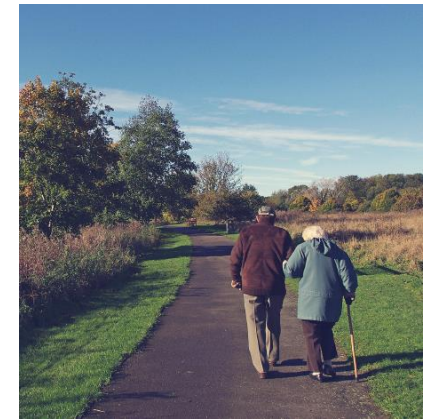
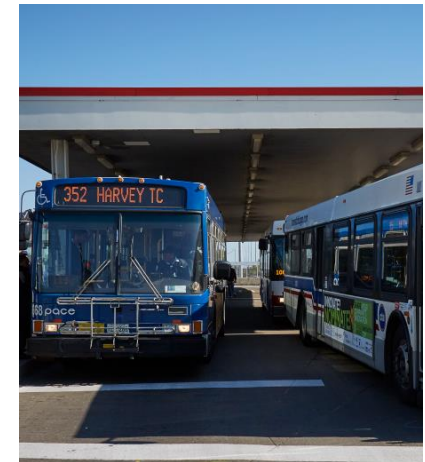


Chicago Metropolitan
Agency for Planning



NWPA Water Supply Sustainability Plan: CII water conservation strategy

NWPA TAC Meeting
March 26, 2024



Agenda

Strategy overview

- Description
- Measures & implementation approaches
- Case studies

Baseline information

- Target audience
- Baseline water use data

Water savings estimates

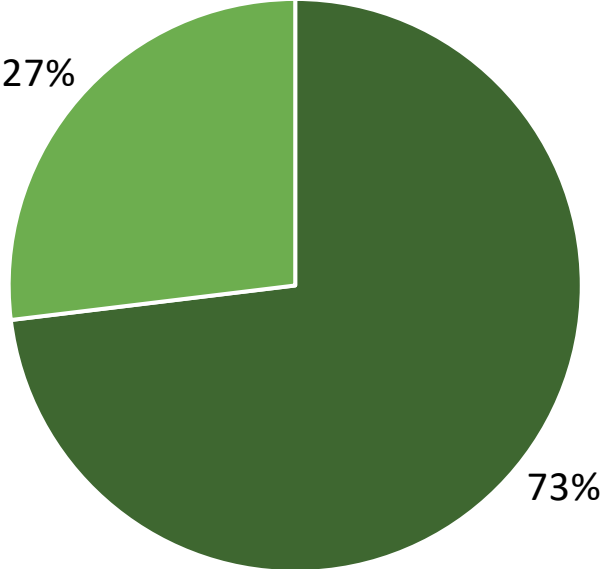
WSSP strategy road map

- Residential Sector
 - Residential retrofits - Single Family
 - Residential outdoor water use (landscape efficiency) - Single Family
 - Residential development standards (new development)
- Water system
 - Water loss control
- Commercial, Industrial and Institutional (CII) Sector

Commercial, industrial, and institutional (CII) water conservation strategy

Water supply systems in the NWPA region

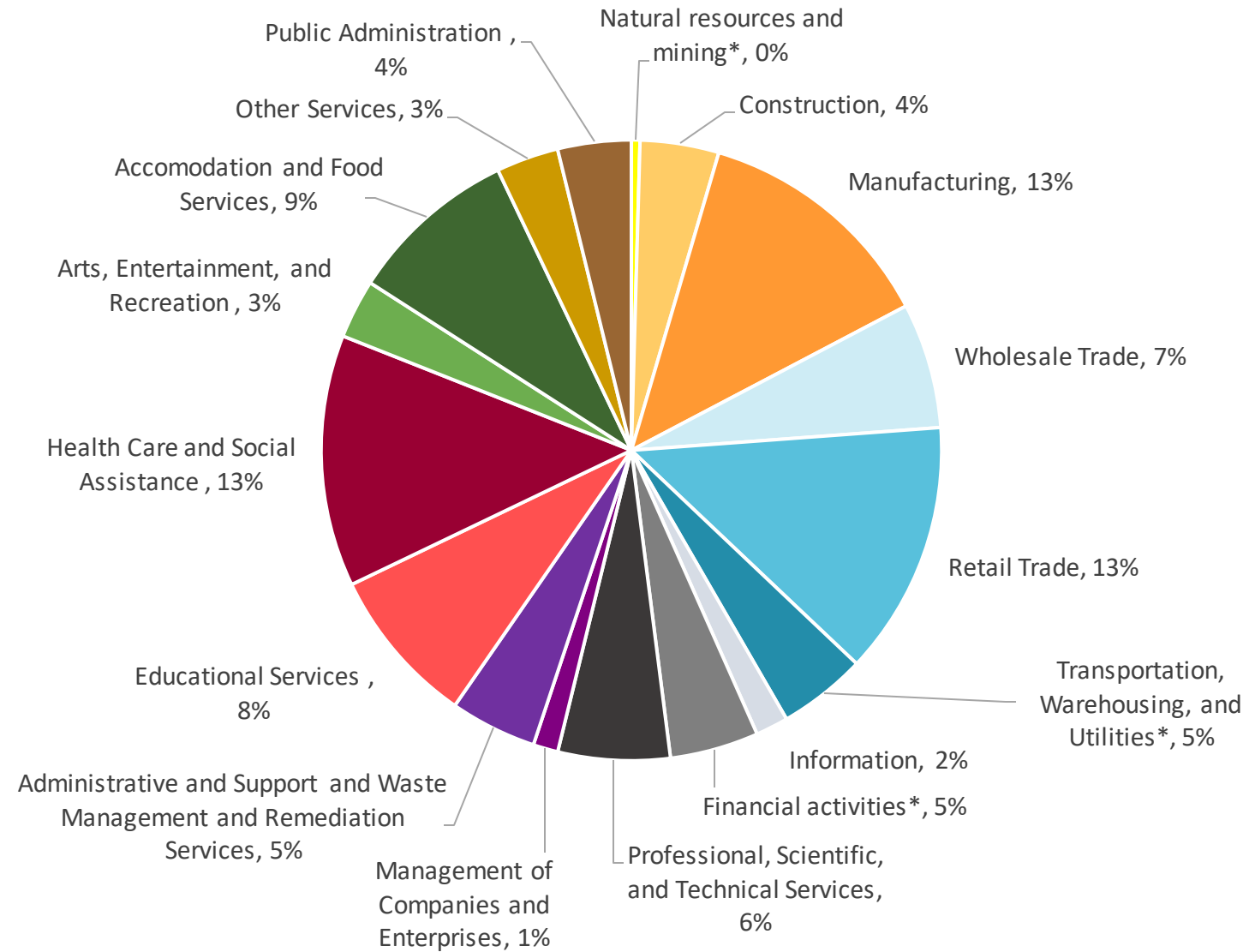
NWPA communities by water supply system type



■ Community Water Supply (CWS) ■ Domestic Self Supply (DSS)

Percentage of total jobs within NWPA's CWS sector in 2020

(based on US Census Bureau NAICS sectors)



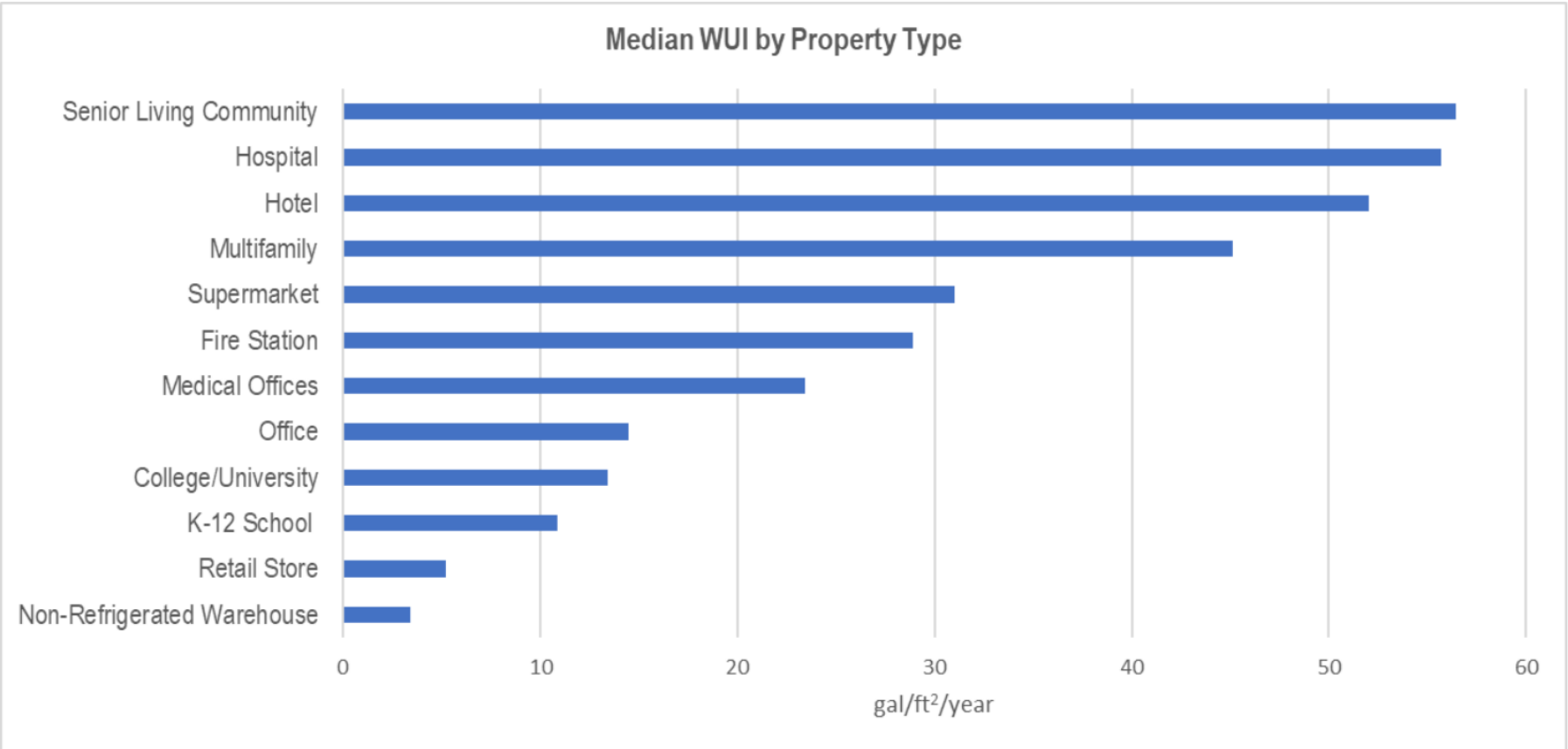
Strategy overview

NWPA's commercial and institutional CWS customers implement water conservation measures with a focus on domestic uses, kitchen/dishwashing, and cooling/heating

Priority employment sectors and facility types:

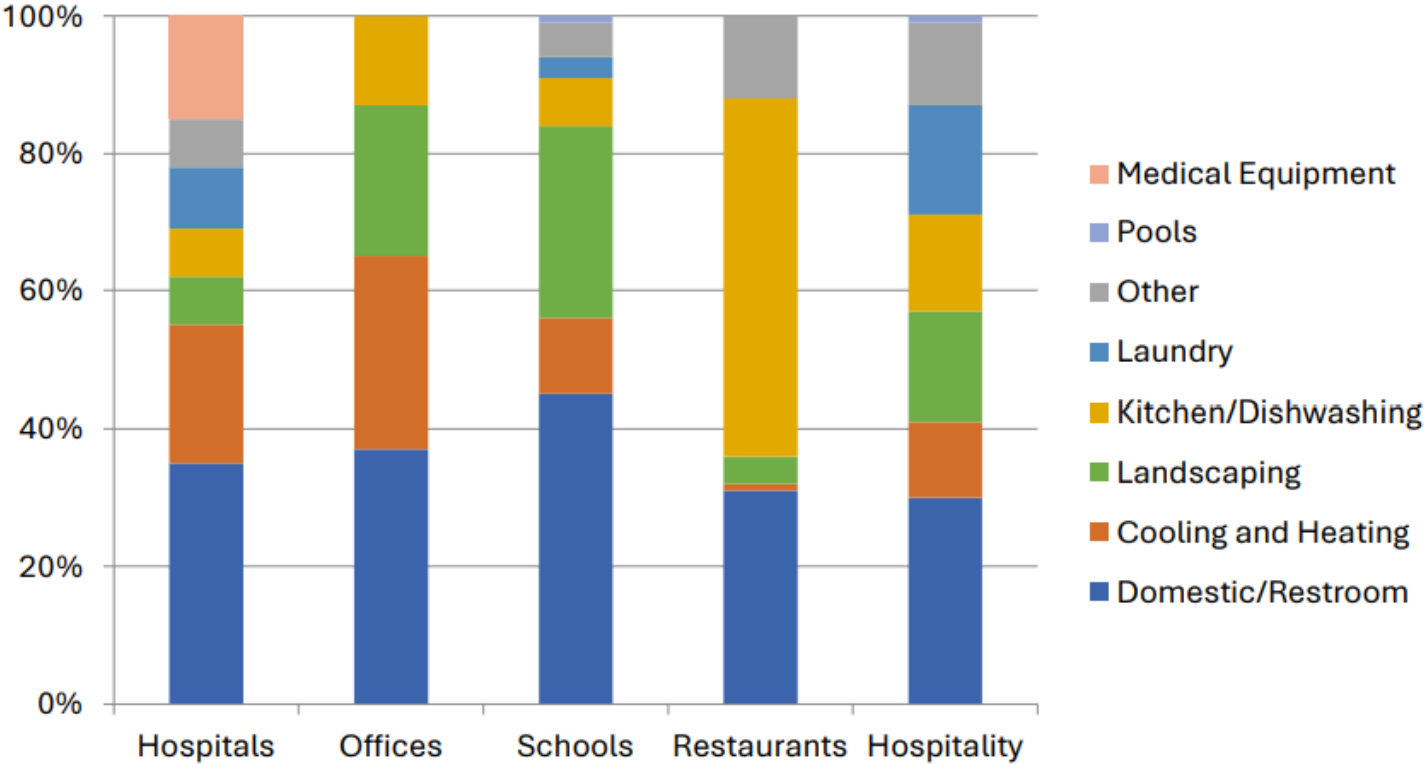
- Hospitals, senior living/nursing homes (healthcare & social assist., 13%)
- Restaurants, hotels (accommodation & food services, 9%)
- Supermarkets, grocery stores (retail trade, 13%)
- Educational services (schools, 8%)

Water use intensity by CI property type



Source: Energy Star Portfolio Manager: U.S. Water Use Intensity by Property Type Technical Reference:
https://www.energystar.gov/sites/default/files/tools/National%20WUI%20Technical%20Reference%202023_0719b.pdf

End Uses of Water in Various Types of Commercial and Institutional Facilities



Source: WaterSense at Work (November 2023; based on analyzing data in: Schultz Communications. July 1999. A Water Conservation Guide for Commercial, Institutional and Industrial Water Users. Prepared for the New Mexico Office of the State Engineer

Benefits of CII water conservation

- Reduced water use results in cost savings, including energy savings, for facility managers
- Opportunity to achieve considerable water savings from large CII water users
- Protection of water supply for future needs

CII measures

Measure	What does the measure address?	Which CII sector is the measure recommended for?
Replace inefficient restroom fixtures with WaterSense labeled products	Reduces domestic/restroom water use	Hotels, Restaurants, Retail trade, Healthcare, Schools, Offices
Replace old single-load clothes washers with ENERGY STAR products	Reduces water use associated with laundry in facilities like hotels	Hotels, Healthcare
Replace old dishwashers with ENERGY STAR qualified models	Reduces water use associated with kitchen uses and dishwashing	Restaurants, Schools
Replace existing pre-rinse spray valves with models that use 1.3 gpm or less.	Reduces water use associated with kitchen uses and dishwashing	Restaurants, Schools
Replacement of single-pass cooling refrigeration equipment	Reduces the amount of water used and discharged during the cooling process	Retail trade (e.g., grocery stores)

Source: WaterSense at Work

Implementation approaches

Implementation approach	What does the approach entail?	Which measures does the approach address?
Water use surveys, water audits, and landscape evaluations	Tools used to provide customers with an understanding of current water use and recommendations to improve landscape and indoor water use efficiency	Often prerequisite for implementation of conservation practices and retrofits
Codes, standards, and voluntary programs	New construction and/or renovation building codes, standards, and guidelines that promote the adoption of water-efficient products, voluntary programs, and increase water-efficient building performance and operations	Use of/replacement with water-efficient fixtures and appliances
Rebate programs	Monetary incentives for CII customers to encourage the adoption of water-efficient fixtures and technologies	Replacement of old fixtures and appliances
Information and education	Water information and education programs to promote and encourage the adoption of water conservation practices in the CII sector	Applicable to all water conservation measures

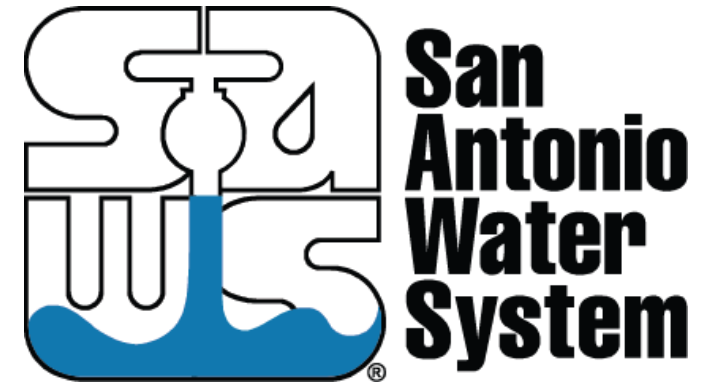
Case Study: San Antonio Water System (SAWS) Commercial Conservation Rebates and Audits Program

Background:

- 10 percent of the SAWS customer base are commercial customers
- Account for 40 percent of annual water sales

Strategies and approaches used:

- Businesses that use SAWS potable water can receive a rebate for installation of water-saving equipment
- The program is easily adaptable to any proposed retrofit project ranging from fixtures to landscape irrigation systems



Source: sanantonio.gov

Case Study: Green Restaurant Association

Background:

- The Green Restaurant Association is a non-profit organization with the goal of encouraging restaurants to become more environmentally sustainable

Strategies and approaches used:

- Administers a certification program for restaurants, which includes water efficiency
 - Water efficient kitchen appliances and fixtures
 - Water efficient restroom fixtures
 - Water efficient landscaping practices



Source: dinegreen.com

Programs and Resources:

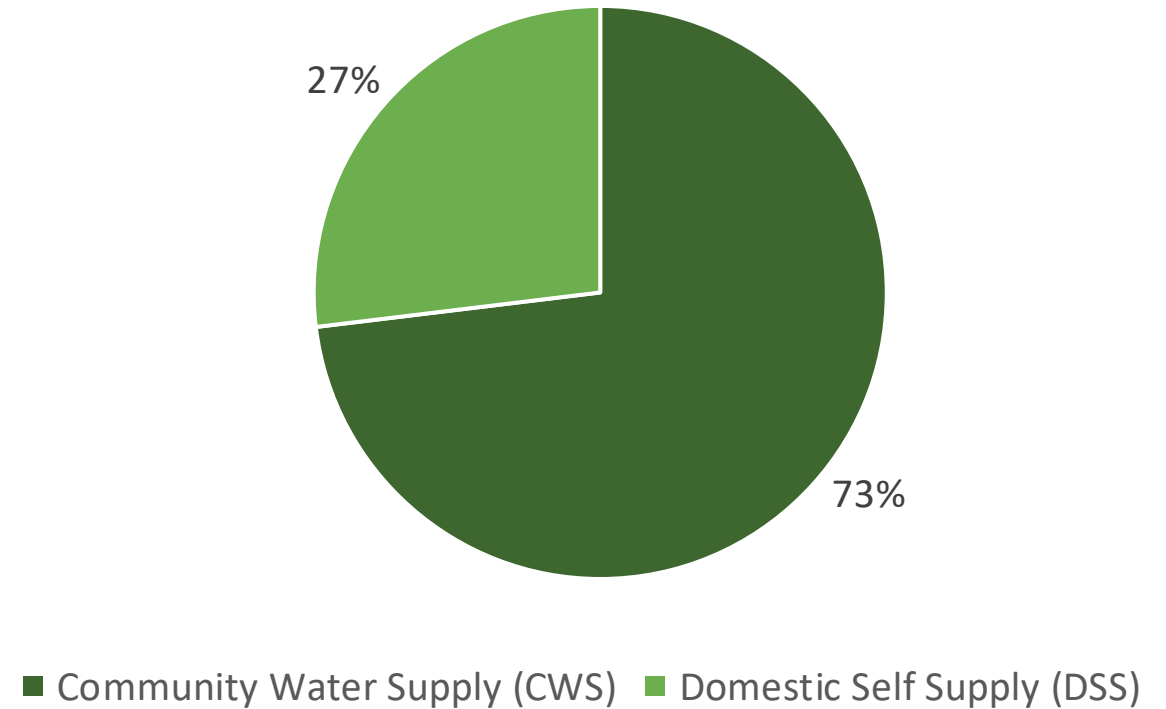
- [WaterSense at Work](#)
 - Provides best practices for reducing water use in commercial and institutional facilities
- [Portfolio Manager](#)
 - Tool for tracking energy and water consumption in commercial and institutional facilities
- [Water Audit Guidelines for Commercial Buildings](#)
 - Guidance for building owners, managers, and governments for conducting water audits
- [South Florida Water Management District Water Audit Guide](#)
 - Guidance for facility managers for conducting water audits at commercial and institutional facilities
- [Illinois Sustainable Technology Center](#)
 - Water conservation and efficiency resources

Water use information

Target audience

NWPA community water supply (CWS) communities

NWPA communities by water supply system type



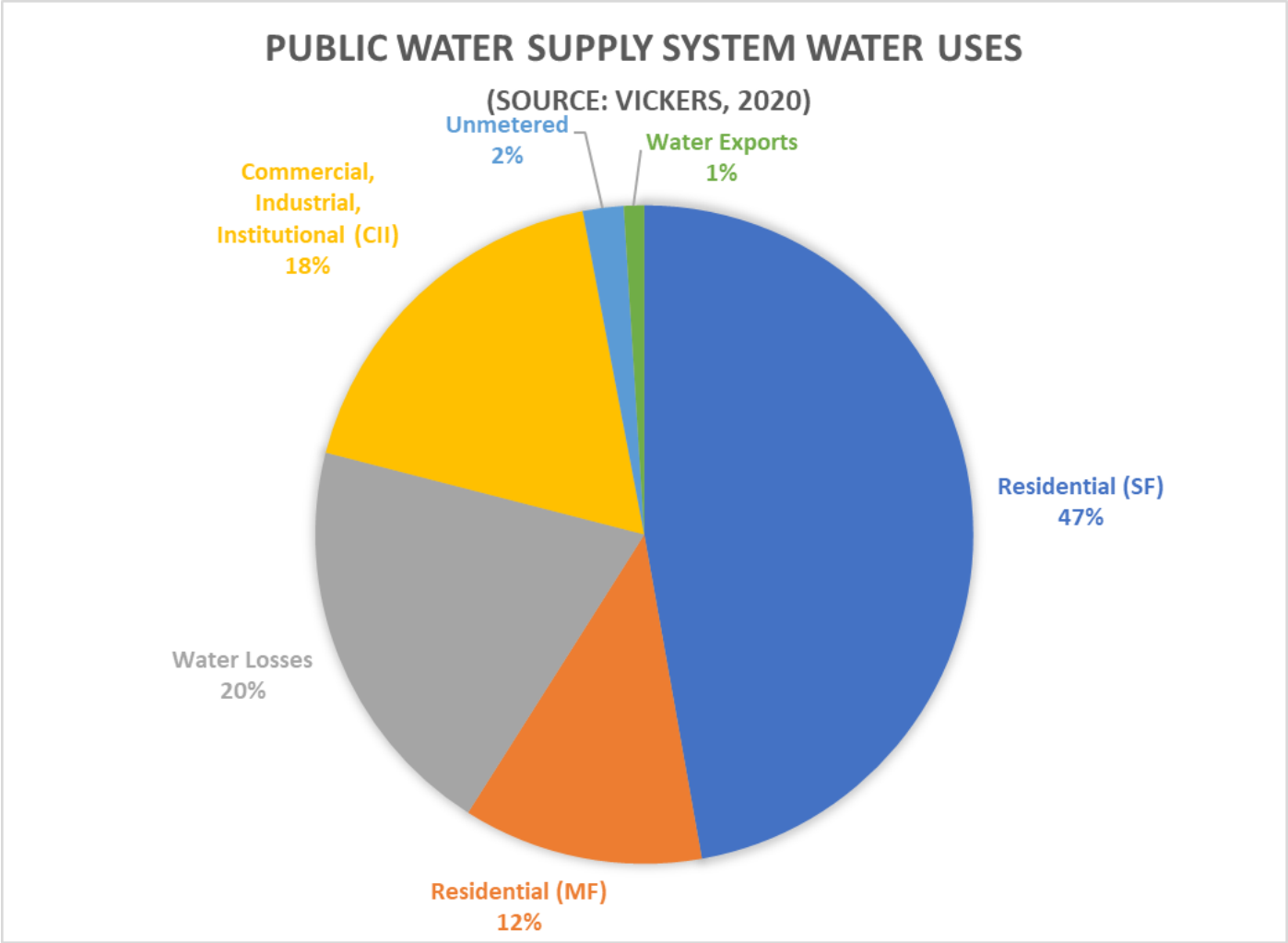
Community water supply (CWS) sector data

CMAP Water Demand Forecast, 2022 (county-level projections)

- The Illinois Water Inventory Program (IWIP) 2018 water use data

Water savings estimates

How do community water suppliers use water?



CII: Baseline water use

Assumes NWPA PWS have similar water use as national averages

County	Municipal PWS Total Use, MGD	Water Loss, MGD (20%)	Non-residential Use, MGD (20%)	Residential, SF (48%)	Residential, MF (12%)
DeKalb	TBD	TBD	TBD	TBD	TBD
Kane	50.5	37.9	24.2	24.2	6.1
Kendall	5.0	3.7	2.4	2.4	0.6
Lake	51.1	38.3	24.5	24.5	6.1
McHenry	19.9	14.9	9.6	9.6	2.4
NWPA region total	126.5	94.9	60.7	60.7	15.2

CII: Preliminary water savings estimates

Water Savings = 13.5% x 60.7 MGD = 8.2 MGD X participation rate

- CUWCC's water savings estimates for Commercial (12%) and Industrial (15%) served by public water supply yielding a 13.5% reduction in water demand per employee per day in after a 20 year period (Water2050)
- CII savings range from 15% - 60% (Vickers 2021)
- 15 to 35 percent being the most typical savings (Dziegielewski 2000).
- *Participation rate assume Low participation 10% , High Participation 50%*
 - *The actual proportion of utilities with CII Programs is about 20 percent or less (AWWA, 2016)*

Water Savings: .8 - 4.1 MGD

Discussion

Discussion:

Are the water savings estimate assumptions valid?

Discussion:

Do you know of NWPA communities with a water conservation program that focuses on the CII sector?

- What measures are they taking?

How can the NWPA get more communities focus on CII water conservation?



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Questions?

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