

Water Conservation



January 5, 2011

DuPage Environmental Summit

DuPage Water Commission



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Water is a Limited Resource

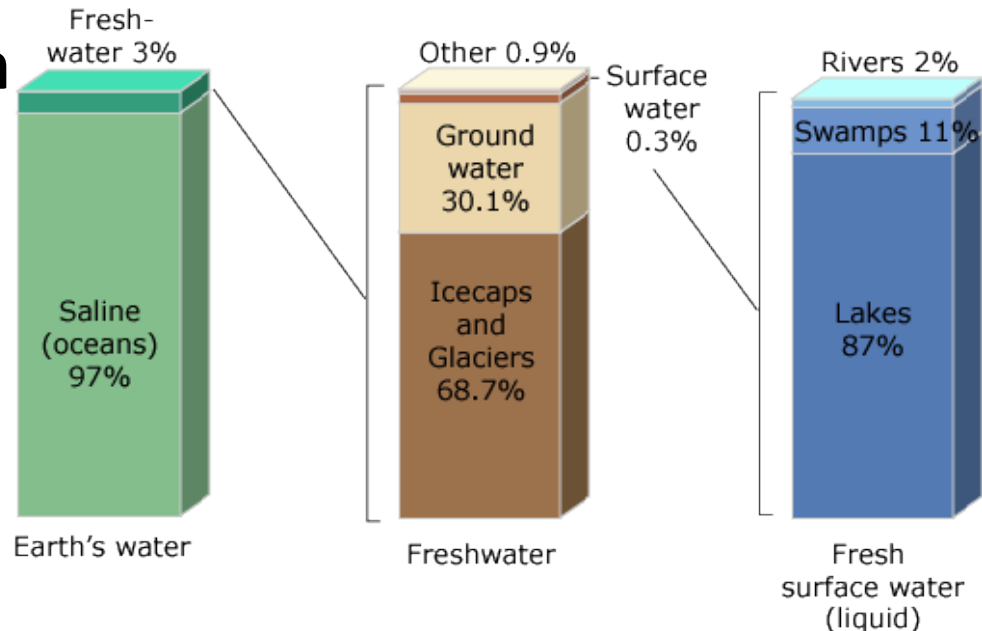
Did you know...



70% of the earth's surface is covered with water?

However, **less than 1%** is suitable or accessible for drinking water.

Distribution of Earth's Water



The Great Lakes are key to regional water supply

- 💧 **The Great Lakes are the largest system of fresh, surface water on earth, containing roughly 18% of the world fresh water supply.**
- 💧 **Lake Michigan is the second largest of the Great Lakes.**
- 💧 **Nearly 750,000 people in DuPage County get their water from Lake Michigan.**
- 💧 **The Great Lakes Compact limits how much water can be taken and requires all water utilities to have a water conservation program.**



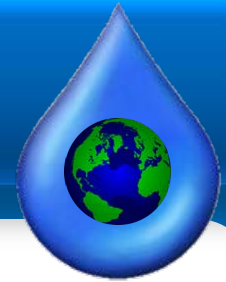
Sources: Great Lakes Information Network; Bulletins E-1866-70, Sea Grant College Program, 1985.



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Water Conservation is Everyone's Job

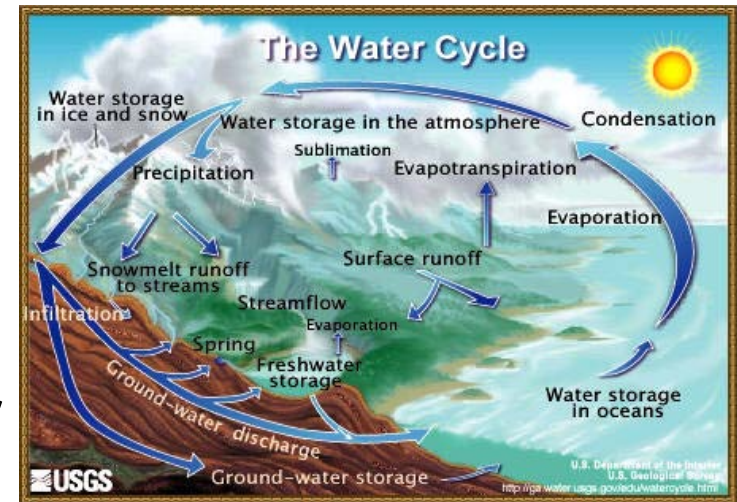


- Water is constantly being recycled through the earth's water cycle.
- Human can consume fresh water faster than natural replenishment.

We all use water, so we should do our part to protect and preserve it.

Conserving water is beneficial to our community, because it:

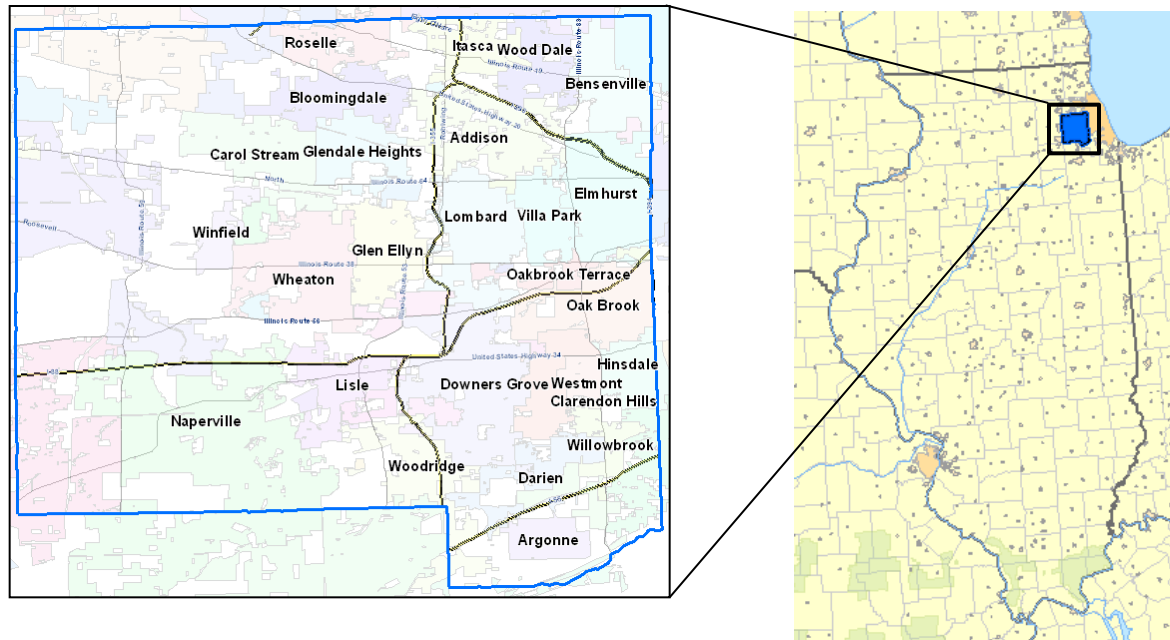
- Protects our water supply for the future, the environment, and natural ecosystems
- Saves energy and money



DuPage Water Commission (DWC)

- **Mission:**

To provide reliable, quality, responsive, and cost-efficient Lake Michigan water service for existing and future customers as required by, or pursuant to, state statutes.

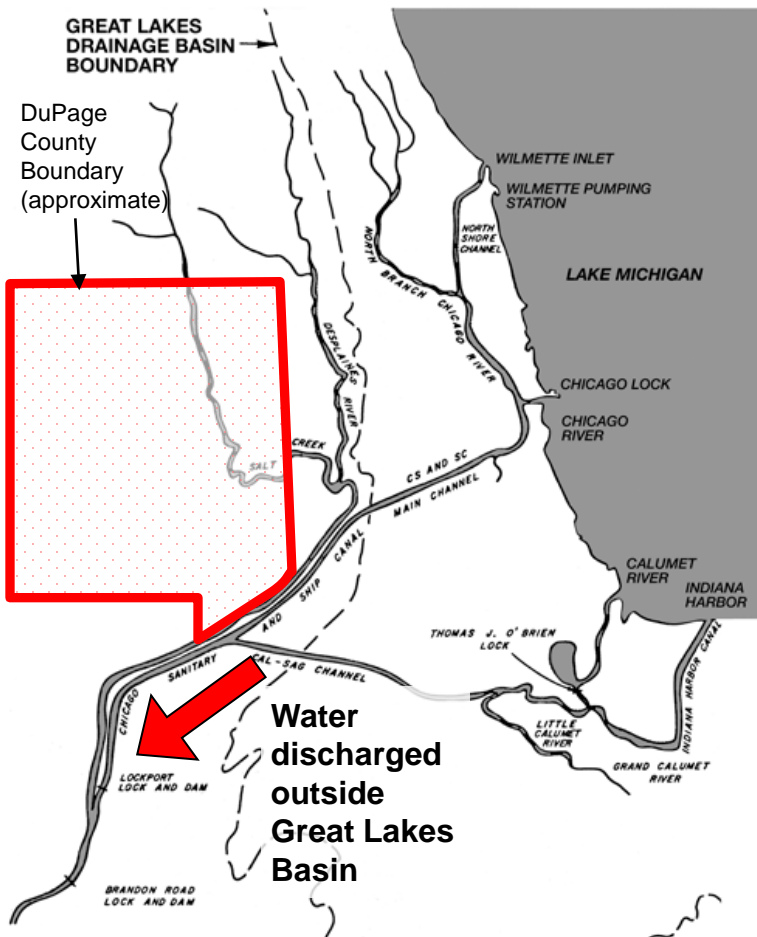


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Chicago Diversion Brings Attention to Management of Water in NE Illinois

Lake Michigan Diversion at Chicago

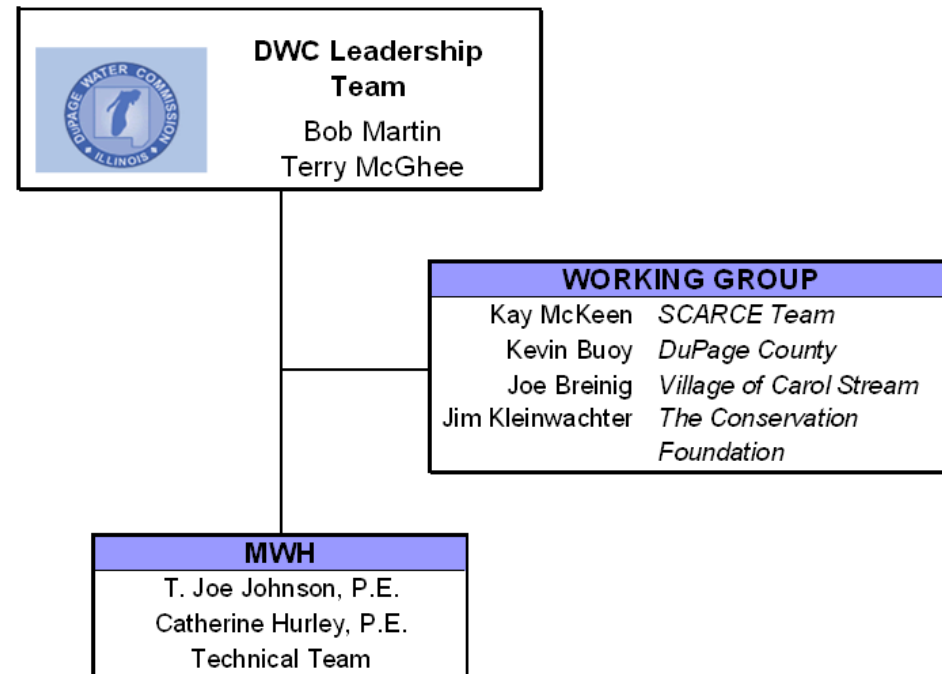


Lake Michigan Diversion at Chicago

- Unique access to Great Lakes Water
- Illinois only about 0.3% of Basin
- Reversal of Chicago River allows for discharge of stormwater and treated wastewater down river and OUT of Great Lakes Basin
- Supreme Court ruling allows for 3,200 cfs diversion
- Diversion management/accounting of potable water supply, lock leakage, discretionary flow, navigation makeup and stormwater diversion

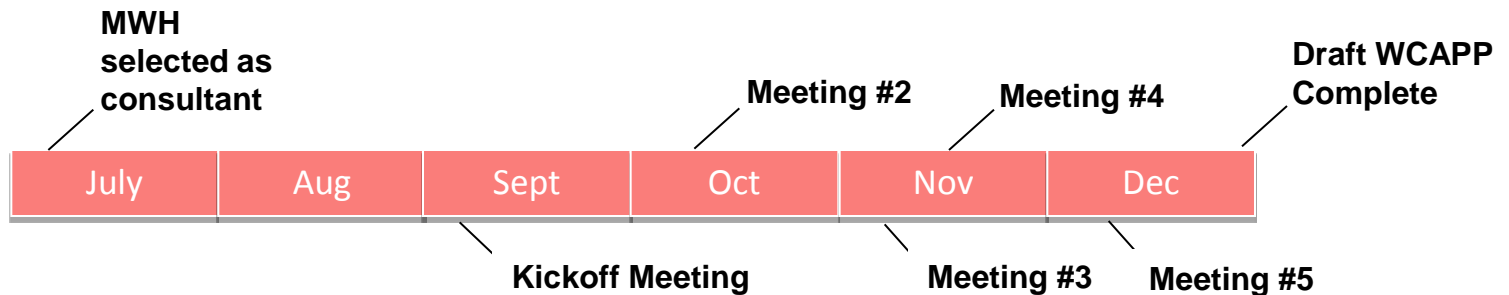
Water Conservation and Protection Program (WCAPP) Development

- Program developed during the second half of 2008 with input from DWC leadership team, Working Group and MWH
- Working Group members selected to represent DWC Member Utilities and local conservation / resource groups



WCAPP Development

- **Five face-to-face meetings from July – December of 2008 held to develop program and implementation plan**



- **Draft WCAPP report completed by MWH and provided to DWC December 31, 2008**



Water Conservation and Protection Program (WCAPP) Overview

- **Primary driver for DWC WCAPP is commitment to stewardship and prudent long-term planning**
- **To implement water conservation in DuPage County, DWC will:**
 - **Develop and communicate clear and consistent message**
 - **Implement select group of programs to create initial surge in conservation efforts**
 - **Organize and distribute conservation resources and tools to be evaluated, customized and used by individual Member Utilities to promote effective local programs**



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Total Net Annual Pumpage vs. Population Served

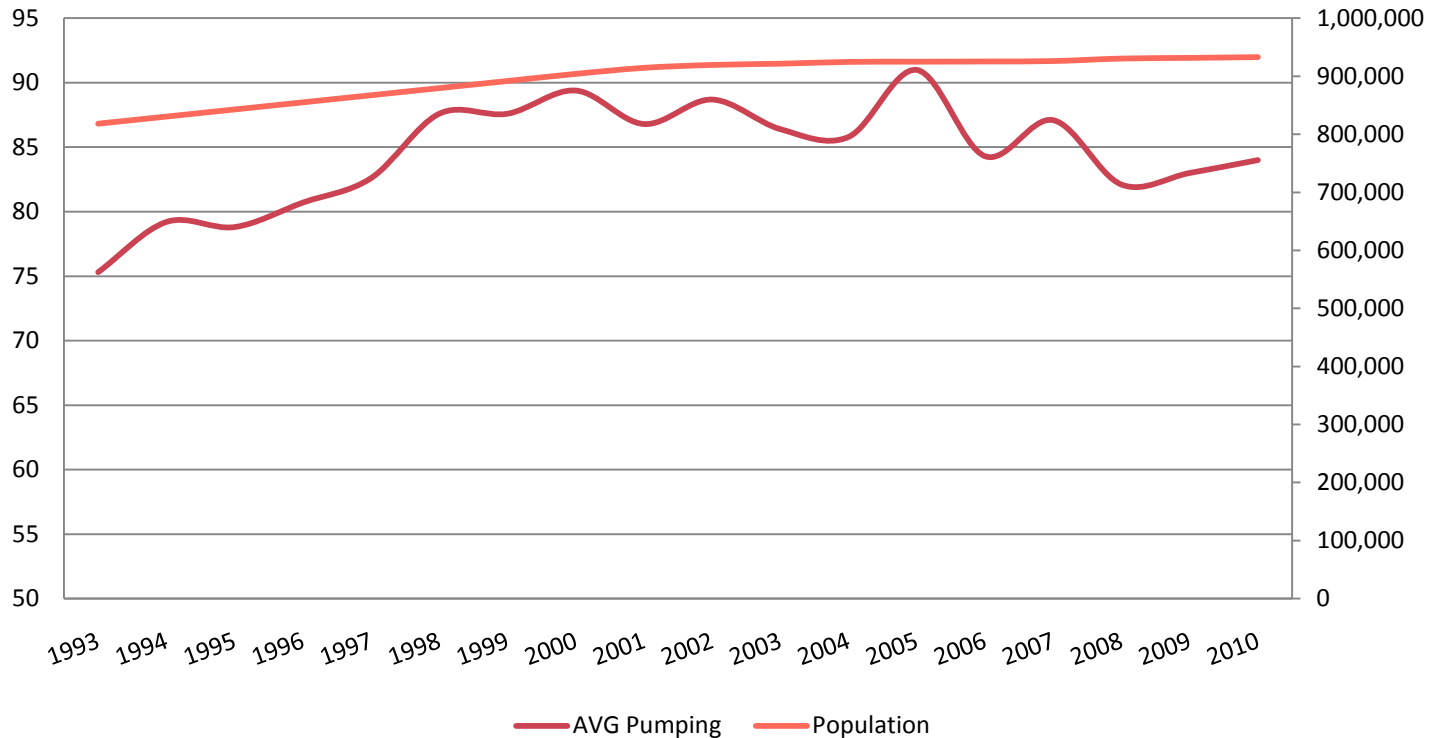
Population vs. Pumping

DWC's Annual Pumpage (1993 – 2010)
Average Daily Flow ~ 87 MGD

Maximum Daily Flow ~ 145 MGD

Average DWC per capita water usage ~ 106 gpcd

General range of per capital water usage ~ 70 to 160 gpcd



Data Source: Illinois Department of Natural Resources – Water Use Data (LMO forms)



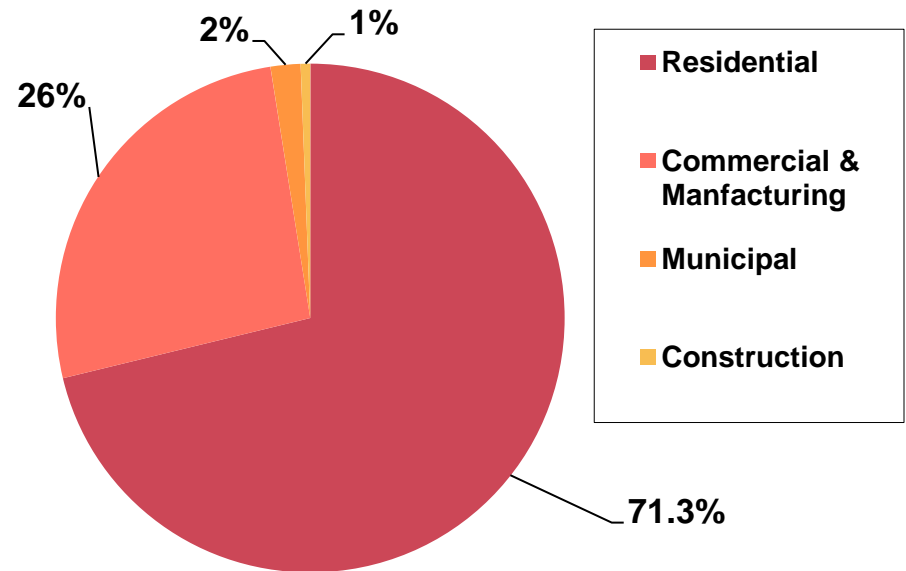
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DuPage County Water Usage Summary

- 💧 **Average daily water use for Lake Michigan water users in DuPage County is 106 gallons/person/day**
- 💧 **Over 71% of total water use is for residential customers**

Water Usage Summary



Source: Summary of data from DWC and Illinois Department of Natural Resources Data does not include unaccounted for flow values for Argonne or IAWC.

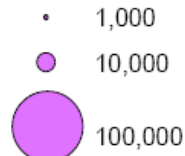
Note: Summary data only includes Lake Michigan water delivered by DuPage Water Commission Member Utilities to their customers. Data does not include any groundwater use.



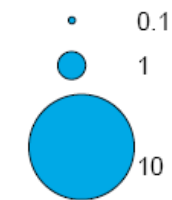
Baseline Analysis of DWC Water Usage






Legend

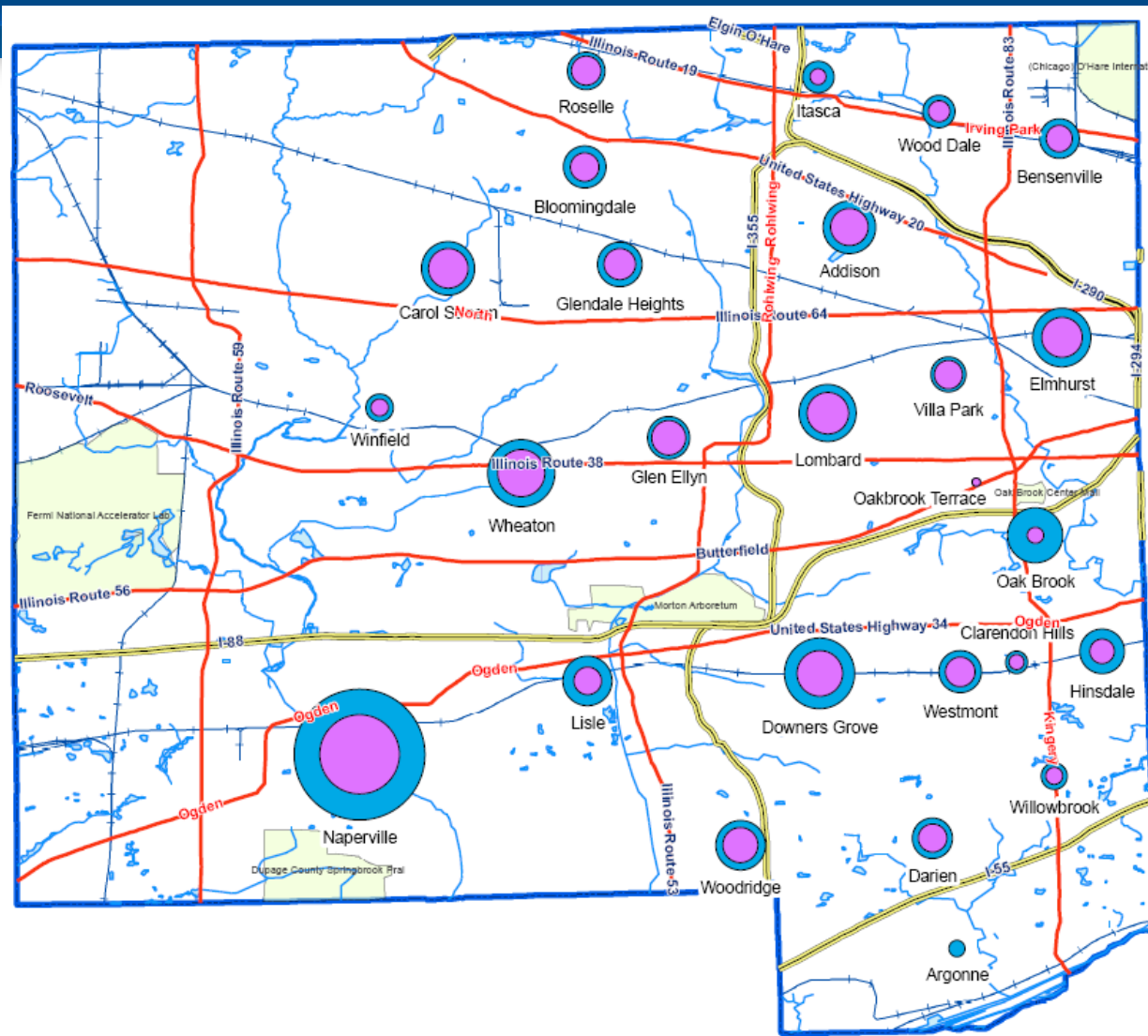
Population



Total Flow (MGD)



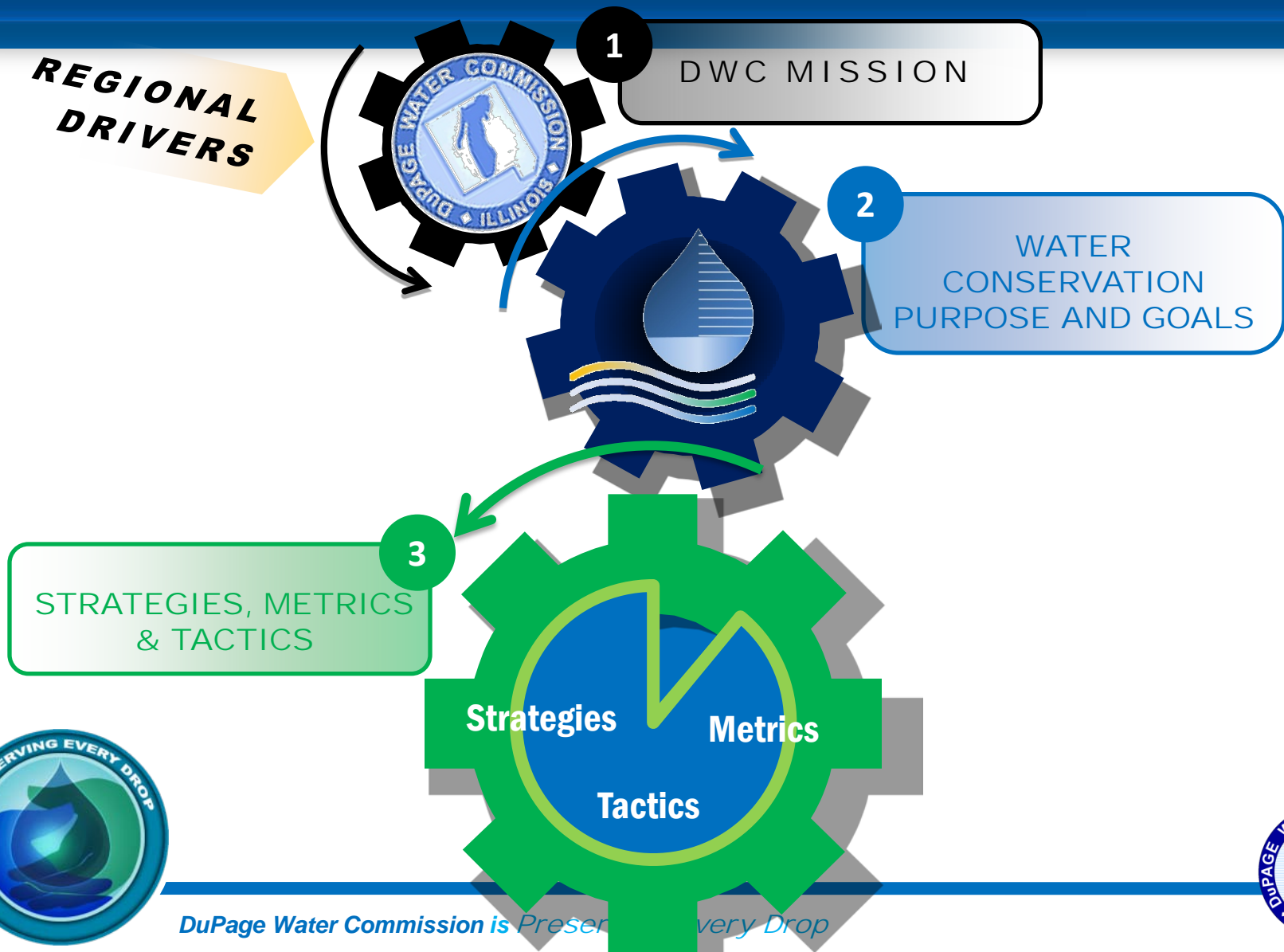
-  Major Roads
-  Expressway
-  Waterways
-  DuPage County Limits
-  Open water



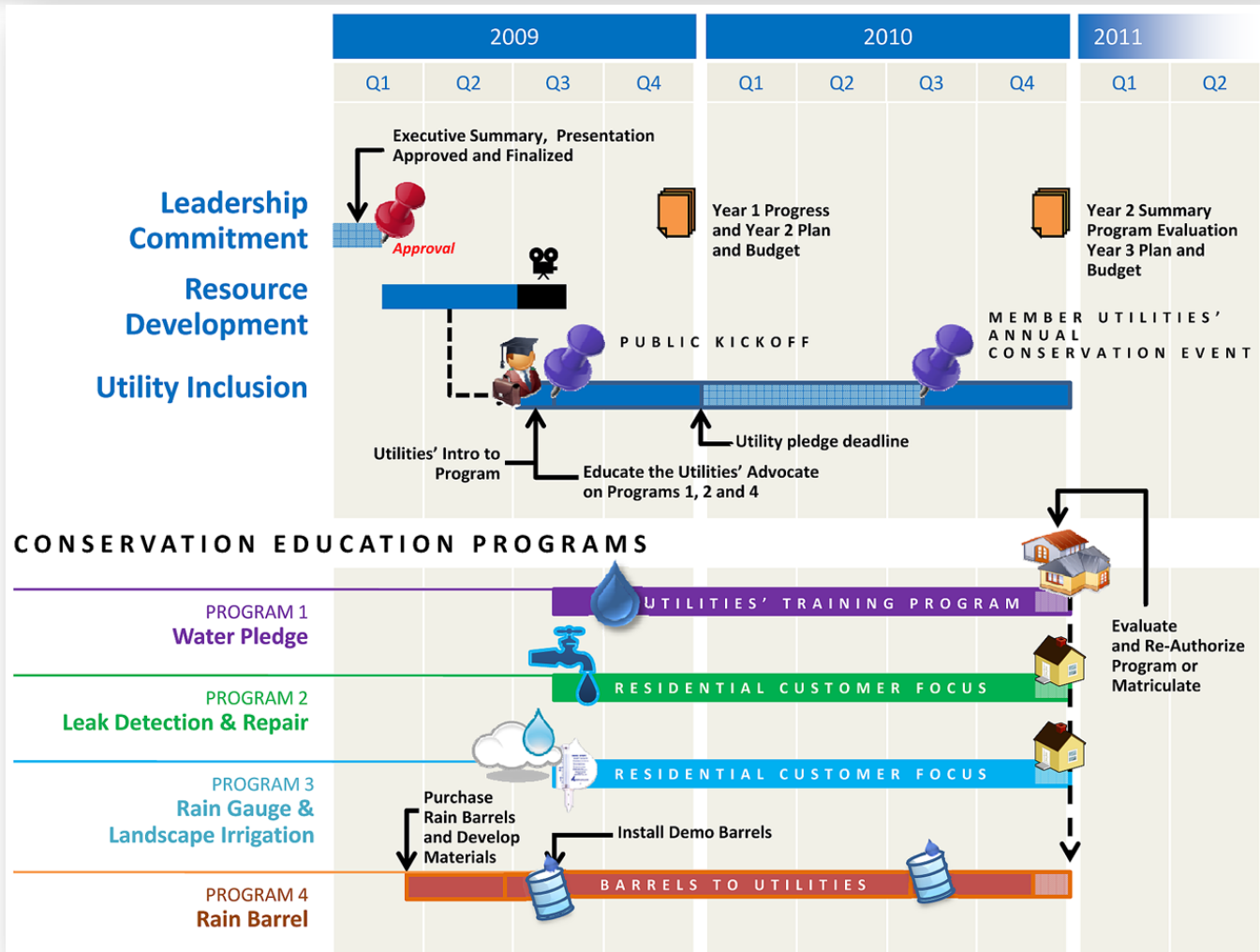
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Roadmap outlines the approach used to create the WCAPP



Program implementation outlined in detail for 2009 and 2010



Regional Water Conservation Program

💧 Program's overall goal is to achieve a 10 % reduction in water use per person within 10 years.

💧 ***You*** can help by:

💧 saving **10** gallons of Water per day

OR

💧 saving **1** gallon of Water per day every year for **10** years.

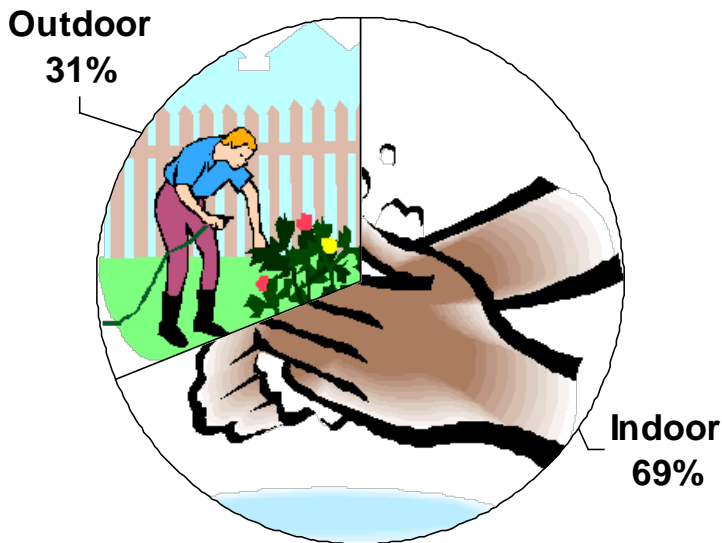


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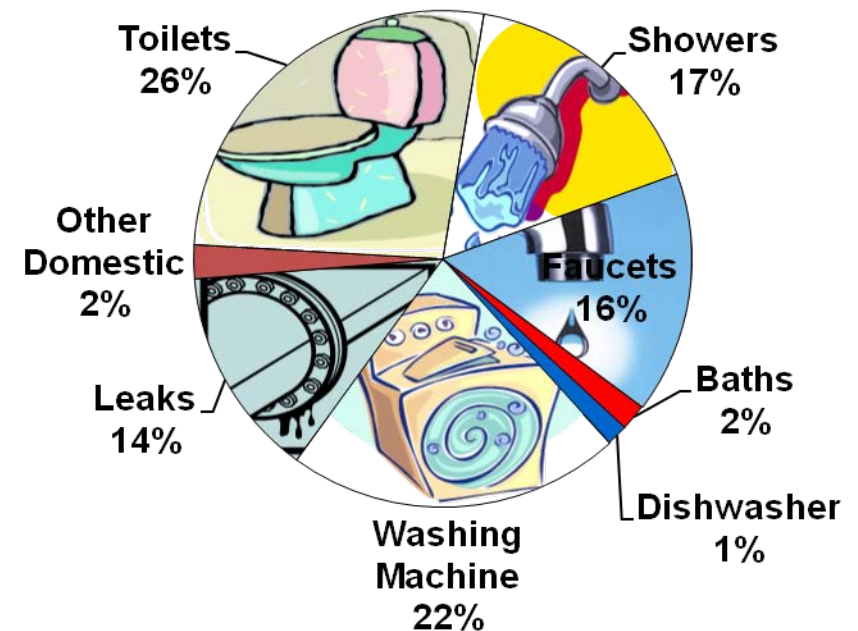


Programs were chosen by their potential to have the greatest impact

Average Indoor and Outdoor Water Use in a Non-conserving Home



Average Indoor Water Use in a Non-conserving Home



80 – 90% of the outdoor component of residential water use goes to lawn care



WCAPP focuses on conservation education and awareness

Four education programs were developed, combining conservation measures (hardware) with educational materials (incentive)



Program 1 – Water Pledge



Program 2 – Residential Leak Detection and Repair



Program 3 – Rain Gauge and Landscape Irrigation



Program 4 – Rain Barrel



Conservation Education Program 1 – Water Pledge



Water conservation is everyone's responsibility.

- ◆ There are two groups asked to make a water conservation pledge:
 - ◆ Your Water Utility
 - ◆ You
- ◆ How can you pledge?
 - ◆ Fill out the pledge either online at www.preservingeverydrop.org or by mail
 - ◆ Identify the ways that you can conserve water in and around your home
- ◆ Examples of ways to conserve are:
 - ◆ Decrease your shower by two minutes
 - ◆ saves **10** gal for a regular showerhead
 - ◆ saves **5** gal for a low-flow showerhead
 - ◆ Repair leaky toilets
 - ◆ A small toilet leak can save you **\$50** or more per year through lower water and sewer bills!



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Conservation Education Program 2 – Leak Detection and Repair



Toilet leaks can waste over 100 gallons a day!

There is a simple, easy way to check your toilet for leaks!
Packets that can be found at the Water Conservation table.

- 💧 Dye tablets (or food coloring) helps determine if there is a leak by placing the tablet into the tank of your toilet then waiting 10 minutes to see if the color has appeared in the bowl.
- 💧 If the color appears in the bowl it means your toilet is leaking.
- 💧 Most toilets leak because the flapper is worn out, this is a \$5 piece that is easily replaced.



in



is leaking



Examples of how to reduce your water usage - Toilet

‘If every American home with older, inefficient toilets replaced them with new WaterSense labeled toilets, we would save nearly 640 billion gal/yr, equal to more than two weeks of flow over Niagara Falls!’

US EPA



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Examples of how to reduce your water usage - Toilet

- 💧 A toilet uses **3.5 – 6** gal/flush depending on how old it is.
- 💧 A newer toilet uses **1.6** gal/flush
- 💧 A water saving toilet uses less than **1.3** gal/flush
- 💧 EPA estimates that a family of four that replaces its home's older toilets with WaterSense labeled models will save, on average, more than **\$90/yr** in reduced water utility bills, and **\$2,000** over the lifetime of the toilets
- 💧 See How to Fix a Toilet Leak pamphlet for more tips/info and pick up your leak detection tablets at the Water Conservation and Protection table.



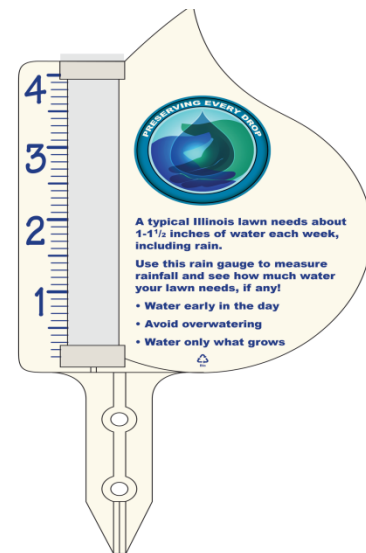
Conservation Education Program 3 – Rain Gauge and Landscape Watering



On average, 1/2 of the annual water used in a single-family home will be used for lawn care!

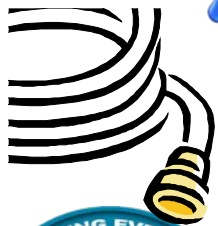
Rain gauges measure how much rain your lawn receives.

- 💧 They can help you tell when to water outdoor plants and turf and how much to water.**
- 💧 Rain gauges have information on how to best use them as well as helpful lawn care tips, such as:
 - 💧 A typical Illinois lawn ONLY needs about 1-1½” of water each week.**
 - 💧 Make sure to place your rain gauge free from overhang:
 - 💧 trees, shrubs, gutters******



Examples of how to reduce your water usage - Outdoor

- 💧 Use native and/or adapted plants that will enhance the site and minimize long-term water consumption. See The Conservation Foundation's Conservation@Home brochure for more tips/info.
- 💧 Water your lawn in the early morning or in the evening, when temperatures are cooler and water isn't lost to evaporation.
- 💧 Use a broom instead of a hose to clean your driveway and sidewalk.
- 💧 Adjust your mower to a higher setting. Taller grass cools the soil and encourages deep roots. If you mow your grass too short, root growth slows down, making the grass more susceptible to heat and drought.



💧 **Important Note:** If you have a standard green, red or other colored garden hose, the pigment used to color the hose likely contains lead that could leach into water passing through it. Therefore, it is recommended that you not drink the water from colored hoses. The only hoses that are definitely safe to drink from or use for vegetable gardening will be labeled as lead-free.

💧 See Lawn Care and Outdoor Water Use pamphlets for more info/tips



Conservation Education Program 4 – Rain Barrel Usage



Watering lawns wastes our drinking water and energy resources.

Watering lawns can be accomplished with rain water instead.

💧 Rain barrels

- 💧 Collects the mineral-rich, chlorine free rain water from your downspout that can be used for watering plants and grass**
- 💧 Conserves drinking water used for lawn care**
- 💧 A quarter-inch of rain falling on the average home yields more than 200 gallons of water**



Examples of how to reduce your water usage – Rain Barrels

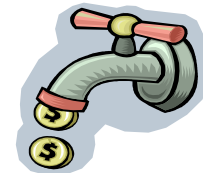
Other ways to use the water in your rain barrel:

- ◆ Attach regular or soaker hoses to the bottom spigot and top overflow valve and direct to landscaped areas nearby.
- ◆ Fill a bucket to hand-water plants in your garden and indoor plants.
- ◆ Use for pet-care, from filling animal water bowls, to using for pet baths.
- ◆ Use the rain water to wash cars and bicycles.
- ◆ See the Rain Barrel Brochure for more tips/info as well as how to install, paint, and purchase rain barrels.



Examples of how to reduce your water usage - Leaks

- 💧 **Check for hidden leaks in your water system. Turn off all faucets in and around your house, then check the reading on your water meter. Wait 15 minutes without turning any water on, then check the meter again. If the reading has changed, you have a leak.**
- 💧 **Check every faucet in your home for leaks. Just a slow leak can waste **15 to 20** gallons a day. Fix it and you will save about **6,000** gallons a year.**



Roadmap Status Overview

2009				2010				2011	
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2

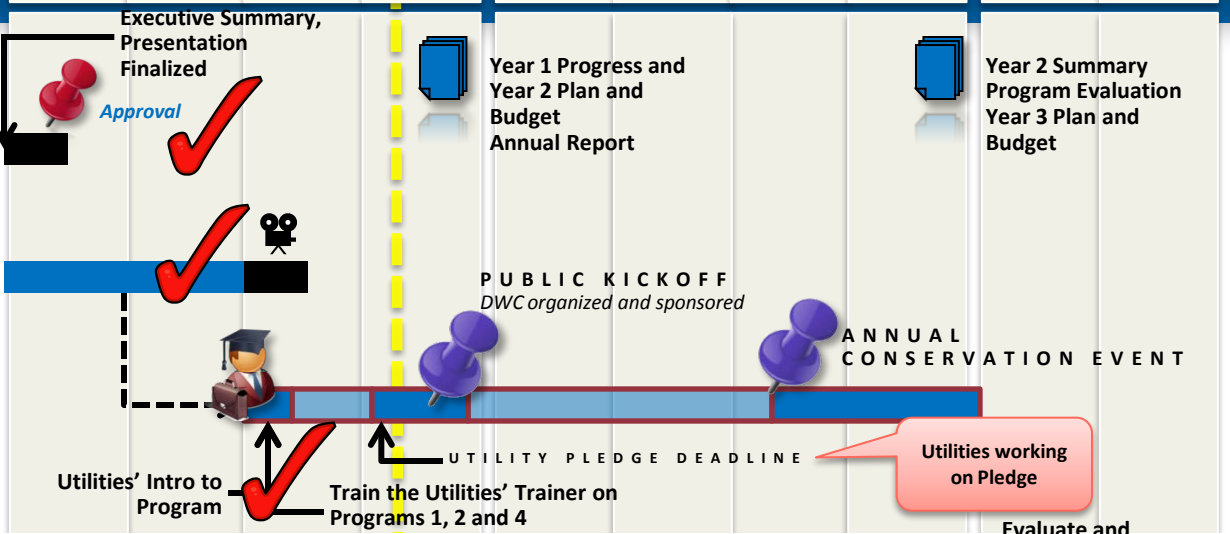


Completed Items

Leadership Acceptance

Resource Development

Utility Inclusion



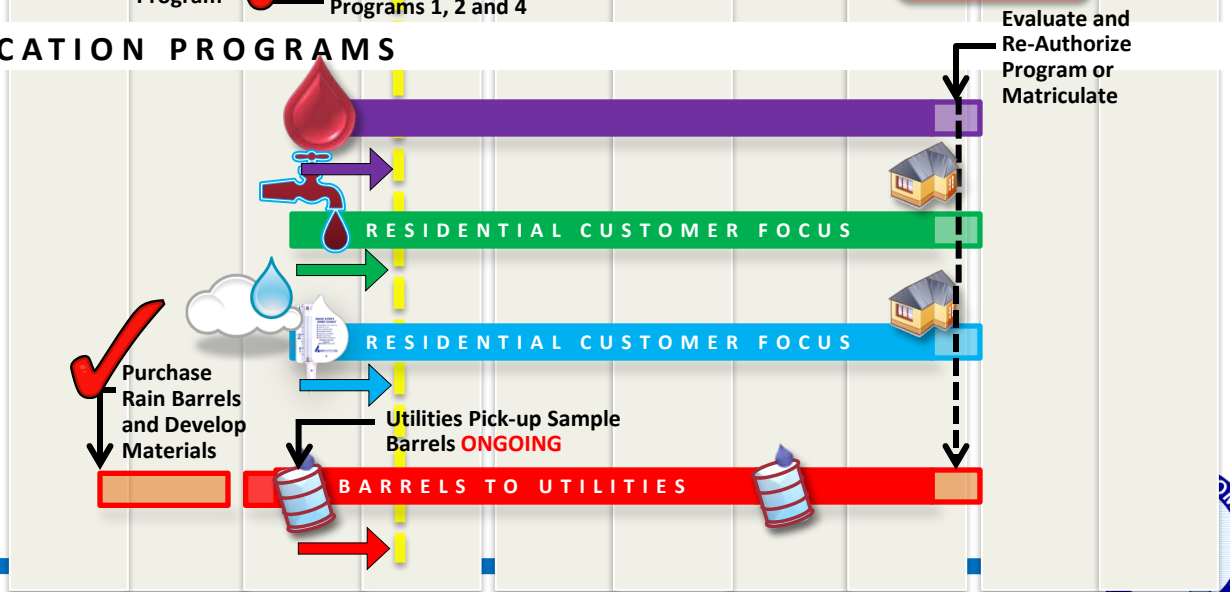
CONSERVATION EDUCATION PROGRAMS

PROGRAM 1
Water Pledge

PROGRAM 2
Leak Detection & Repair

PROGRAM 3
Rain Gauge & Landscape Irrigation

PROGRAM 4
Rain Barrel



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Preserving Every Drop Website



<http://www.preservingeverydrop.org>

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DWC In-House Improvements



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DWC In-House Improvements



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DWC In-House Improvements



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DWC In-House Improvements



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DWC In-House Improvements



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Leadership in Energy and Environmental Design (LEED)



LEED NC
silver certified

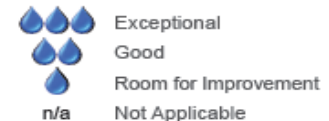


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WCAPP Customer Participation

Survey of Customer Participation in Water 2050 Plan Recommendations DuPage Water Commission



Scores were determined by evaluating utility survey responses against a set of criteria based on the CMAP plan.

Overview

The *Preserving Every Drop* water conservation program was launched by DuPage Water Commission (DWC) in 2009 for the purpose of providing all water users in DuPage County with a consistent message about water conservation and providing DWC customers with the tools needed to be good stewards of the region's finite water supply. The DWC initiated a survey of their 28 customers to evaluate customer participation in the 13 recommendations outlined in the Chicago Metropolitan Agency for Planning (CMAP) document titled *Water 2050: Northeastern Illinois Regional Water Supply/Demand Plan* (CMAP Plan). CMAP, the official planning agency for northeastern Illinois, developed their Water Supply and Demand Plan in March of 2010, which includes a set of 13 water conservation measures and recommendations for demand management. The DWC survey was used to summarize the efforts of the DWC customers in support of the program and assess how well the efforts coordinated with the CMAP Plan. The results of the survey are summarized in the report card (right) and the detailed summary table on the following page.

Survey Results

In total, 24 of the DWC's 28 customers (85%) responded to the survey. According to the responses, all of the respondents have designated a conservation coordinator within their organization and 90% of the respondents are taking actions to include water utility best management practices for reducing water use and increasing water efficiency, as included in the CMAP Plan recommendations 6, 7 and 8. A brief summary of the survey results for the major categories included in the CMAP Plan follows.

Water Survey for Residential Customers

CMAP recommends that utilities provide assistance for reducing leakage and water use to residents in the form of trained auditor visits. Many utilities have complied with this recommendation. Some utilities analyze water bills and send an auditor to those residents who have a dramatic increase in water use. Others set up appointments with any residents that request them. Overall, this recommendation seems to be an area where utilities have been able to institute an affordable and effective program to reduce residential water use.

REPORT CARD

1	Conservation Coordinator	
2	Water Surveys for Residential Customers	
3	Residential Plumbing Retrofit	
4	Residential High Efficiency Toilet Program	
5	High Efficiency Clothes Washers Program	
6	System Water Audits, Leak Detection and Repair	
7	Metering with Commodity Rates	
8	Waste Water Prohibition	
9	Large Landscape Conservation Programs	
10	Conservation Programs for Commercial, Institutional and Industrial Accounts	
11	Wholesale Agency Assistance Program	n/a
12	Public Information Programs	
13	School Education Programs	

Financial Assistance for Plumbing, HET, or HEW Retrofits

Three of CMAP's recommendations suggest financial incentives for replacement or retrofitting of high water use appliances. Survey records show that no utilities are currently offering financial incentives or subsidies for plumbing retrofits, High Efficiency Toilet (HET) replacement, or High Efficiency Clothes

Year 3 Implementation

- **Priorities for 2011 include:**
 - **DWC to continue support and outreach to member utilities**
 - **Continuing Programs**
 - **New Program Placeholder**
 - **DWC to continue public education and outreach**
 - **Video**
 - **School outreach**
 - **Community events**



Examples of how to reduce your water usage – Shower

💧 Showering accounts for nearly 17 percent of residential indoor water use, or about 30 gallons per household per day. That's nearly 1.2 trillion gallons of water used in the United States annually just for showering, or enough to supply the water needs of New York and New Jersey for a year!



💧  shower time

💧 A 5 minute shower with a regular showerhead = **25** gal (5 gal/min)



💧 A 5 minute shower with a low-flow showerhead = **12.5** gal (2.5 gal/min)

💧 full bathtub can hold 35 gal of water



Examples of how to reduce your water usage – Sink

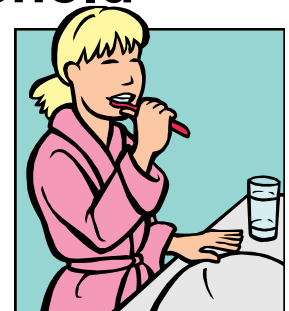


💧 **Faucets account for more than 15 percent of indoor household water use—more than 1 trillion gallons of water across the United States each year.**

💧 **If you turn off the tap while brushing your teeth you could save **3,000** gal/yr**

💧 **By installing WaterSense labeled bathroom sink faucets or faucet accessories, an average household can save more than **500** gal/yr.**

💧 **Not turning off the water while brushing your teeth or washing your hands**



💧 **wastes **1-3** gal/min depending on the flow rate of your faucet**



Examples of how to reduce your water usage – Washing Machine, Dishwasher, Washing Dishes



- **Conventional top-loader washing machines use 30-60 gal/full cycle**
- **Front-loader washing machines use 13-20 gal/full cycle**
- **Only wash full loads of clothes and use the coldest setting possible. This saves water and energy.**
- **Match the load setting with the amount of laundry to be washed if you must wash partial loads.**



- **Conventional dishwashers use 8.6 gal/load, Energy Star dishwashers 5.8 gal/load**
- **Run when it's full and use the shortest cycle.**
- **Scrape dishes instead of rinsing them before loading your dishwasher (wastes 1-3 gal/min)**
- **Fill a basin or the sink with soapy water instead of letting the water run continuously when washing dishes by hand. Soak pans rather than scrubbing them while the water is running.**



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Examples of how to reduce your water usage - Toilet

- 💧 **Toilets account for nearly 30 percent of an average home's indoor water consumption. Older, inefficient toilets also happen to be a major source of wasted water in many homes. Replacing these toilets with WaterSense labeled toilets could save nearly 2 billion gallons per day across the country—that's nearly 11 gallons per toilet in your home every day!**
- 💧 **Over the course of your lifetime, you will likely flush the toilet nearly 140,000 times. If you replace older, existing toilets with WaterSense labeled models, you can save 4,000 gal/yr...**



Questions



See www.preservingeverydrop.org for more information.



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