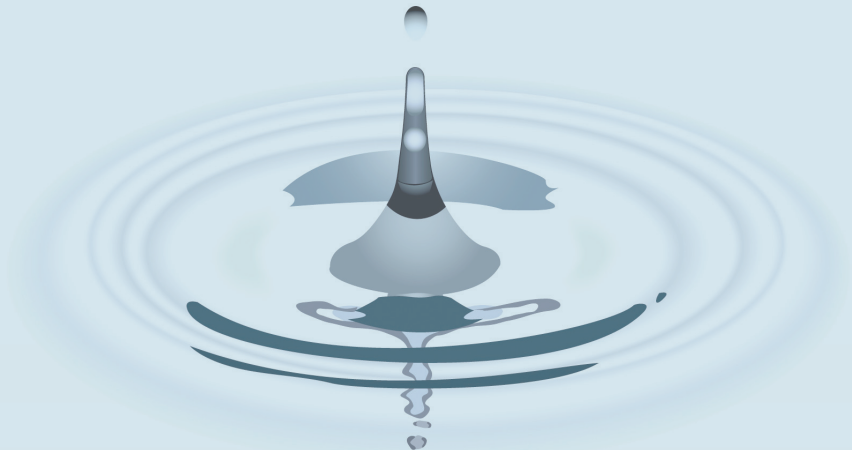




Chicago Metropolitan
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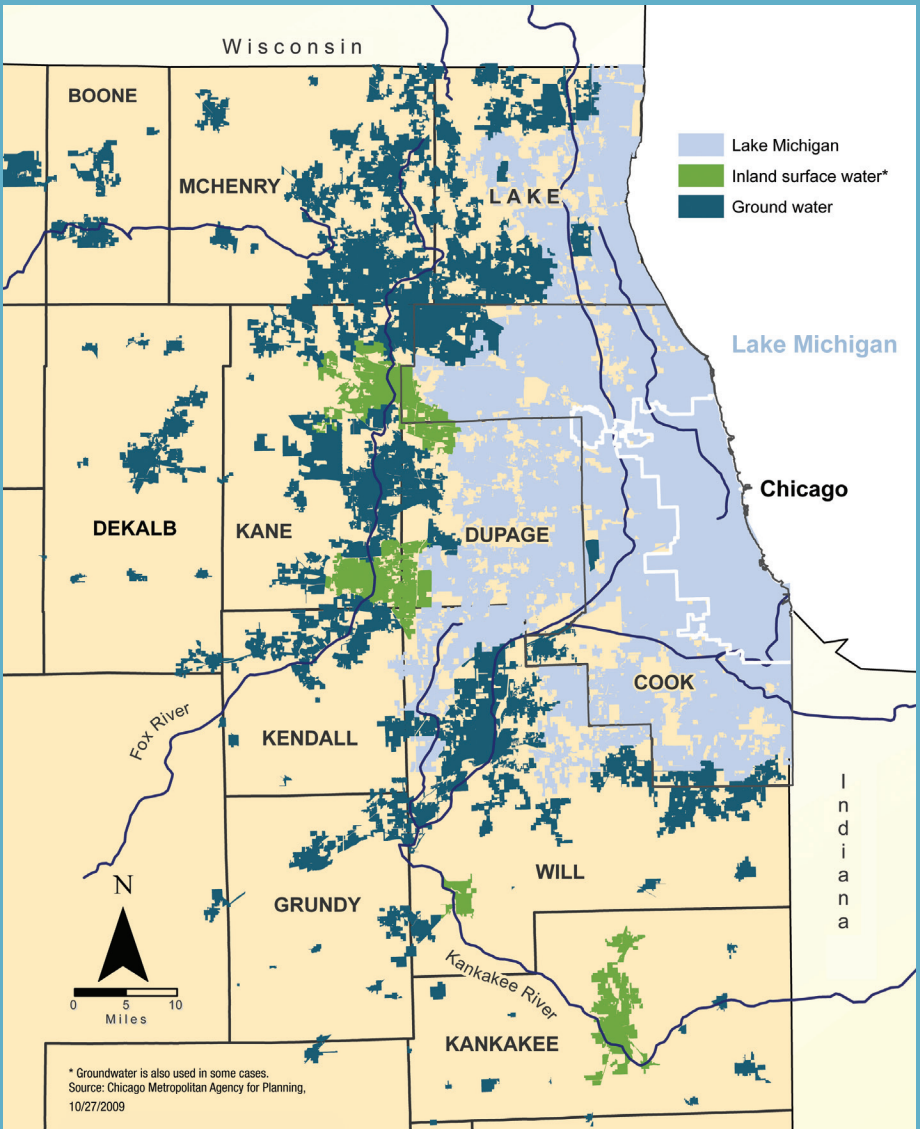
Water 2050

*Setting a course for improved conservation and
demand management in northeastern Illinois*



*To avoid future shortages, water providers need to improve coordination and consumers need to increase conservation.
The region has a new plan that tells how.*

Source of public water supply by municipality in 11-county planning region



Water: Where we've been

Despite its proximity to one of the largest Great Lakes, our region has a finite supply of water. Our ability to use Lake Michigan water is limited by a consent decree of the U.S. Supreme Court and by geography, as many communities are too remote for lake access to be feasible. In those locations, the only options are groundwater or surface water.

For many years, our region grew as if water were an infinite resource. Land use, economic development, and water use are deeply intertwined. Much of the region's population growth in recent decades has occurred in areas without Lake Michigan water, causing concern about the possible depletion of the deep bedrock aquifer that is the unseen water source for so many residents and businesses. By executive order in January 2006, the State of Illinois initiated a statewide study of water-supply issues, in the hope of avoiding serious shortages.

Until recently, the region did not have the solid scientific evidence necessary for making informed decisions about water supply and demand. That began to change in late 2006, when the Chicago Metropolitan Agency for Planning (CMAP) was commissioned by the Illinois Department of Natural Resources (IDNR) to form a stakeholder-based group that would prepare the official water plan for Boone, Cook, DeKalb, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry, and Will counties. CMAP formed the Regional Water Supply Planning Group (RWSPG) with 35 members named by caucuses representing counties, municipalities, and other stakeholder categories such as water suppliers, agriculture, industry and power, wastewater treatment, conservation, environment, academia, and real estate.

"Based on the data, it is clear that continued rapid population growth and economic activity will put a strain on the region's current supply, and significant shortages could result without coordinated action to implement this new water plan."

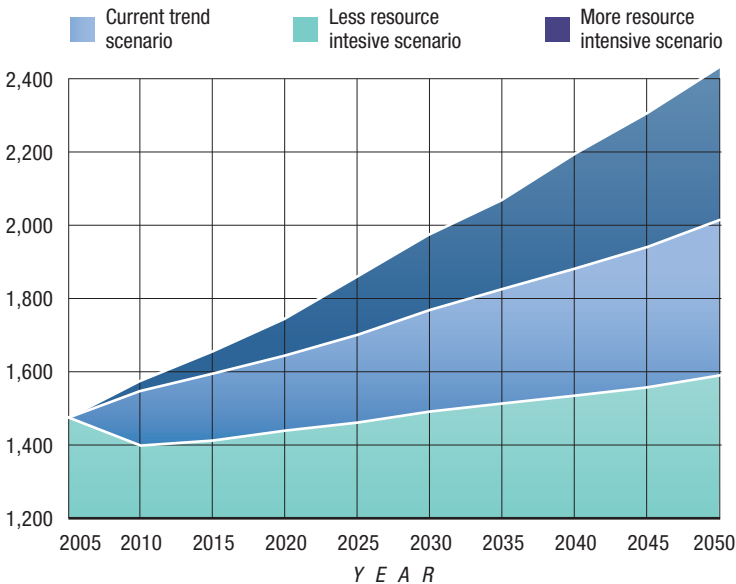
— Bonnie Thomson Carter, former Regional Water Supply Planning Group (RWSPG) chair, Lake County Board member, and president of the Lake County Forest Preserves.

In monthly meetings from January 2007 to January 2010, the RWSPG convened experts and interested parties to learn about and debate whether the region’s water supply is in jeopardy through 2050. On behalf of the group, CMAP contracted with Southern Illinois University to conduct a detailed study of water demand scenarios through 2050. The Illinois State Water Survey (ISWS) provided similar data describing current water supply. A consensus emerged within the RWSPG about the possibility of shortages in coming decades unless water providers take steps to manage supplies more cooperatively and unless residents and businesses take steps to conserve water.

The group spent three years crafting a highly specific plan intended to ensure adequate supplies of clean water through mid-century and beyond. Approved unanimously by the RWSPG on January 26, 2010, the *Water 2050* plan (www.cmap.illinois.gov/waterplan) includes more than 200 recommendations directed at state, regional, county, municipal, and other public agencies. It also has practical suggestions for how residential and commercial consumers can reduce waste and conserve water.

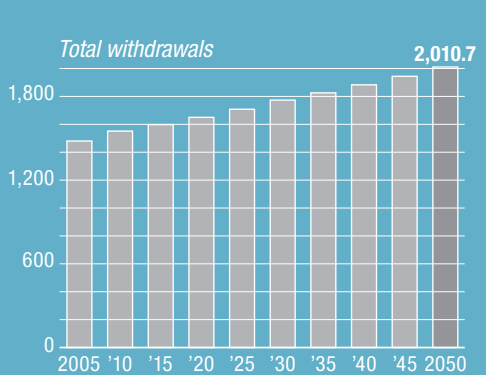
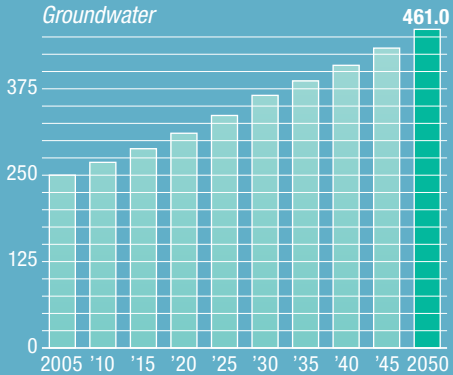
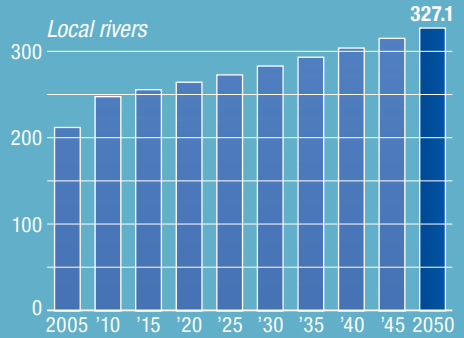
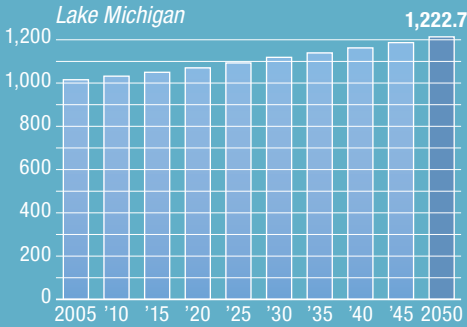
Whether the region will suffer shortages by 2050 hinges on the whether the political will can be mustered to implement the water plan’s recommendations.

Scenario water withdrawals: 2005 - 2050,
in million gallons per day



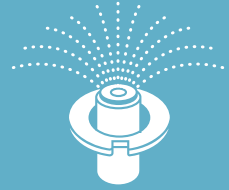
Source: B. Dziegielewski and F.J. Chowdhury, 2008, Southern Illinois University Carbondale

Current and future withdrawals by major source of water, current trends scenario, in million gallons per day, all sectors excluding water for “once-through” power plants



Sources: B. Dziegielewski and F.J. Chowdhury, Southern Illinois University Carbondale; Chicago Metropolitan Agency for Planning

Water conservation strategies, in million gallons per day (MGD)



Update faucets and shower heads and test for leaks.

Modern fixtures can be two and three times more efficient than what was being used just two decades ago (pre-1994). A typical retrofit kit includes three faucet aerators (two bath, one kitchen), one shower head and two dye tablets for leak testing.

The region could save
 if **10%** retrofitted:
5.2 MGD
 if **50%** retrofitted:
26.0 MGD

Make the switch to high-efficiency toilets.

Replacing older toilets would amount to 2.2 to 7.2 gallons saved per flush (depending on prior toilet). Newer high-efficiency toilets use 1.28 gallons or less per flush. Given that toilets account for 30% of all indoor water use, there's a lot of water to save.

The region could save
 if **10%** used HETs:
15.0 MGD
 if **50%** used HETs:
74.8 MGD

Get rid of the top-loader.

Switching from a top-loader to a front-loader can result in water savings of 12 gallons per wash load. On average, that's a per-household savings of 4,433 gallons a year. Energy Star ratings don't include water use; when buying, go for a low Water Factor.

The region could save
 if **10%** got HEWs:
3.2 MGD
 if **50%** got HEWs:
16.1 MGD

Don't waste water.

The report suggests others, but right now you have to get a permit to install closed-system air conditioning, must install water-recycle systems at car washes, and have to restrict non-essential outdoor water use (including sprinkling) from May 15 to September 15.

The region could save
 if **10%** noted rules:
12.1 MGD
 if **50%** noted rules:
60.3 MGD

**We could save 35.5 MGD if 10% did all of the above together,
 177.2 MGD if 50% did all of the above together.**

Note: recommendations cover the counties of Boone, Cook, DeKalb, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry and Will.

Sources: CMAP; Andrew Paley, Northwestern University Medill School of Journalism

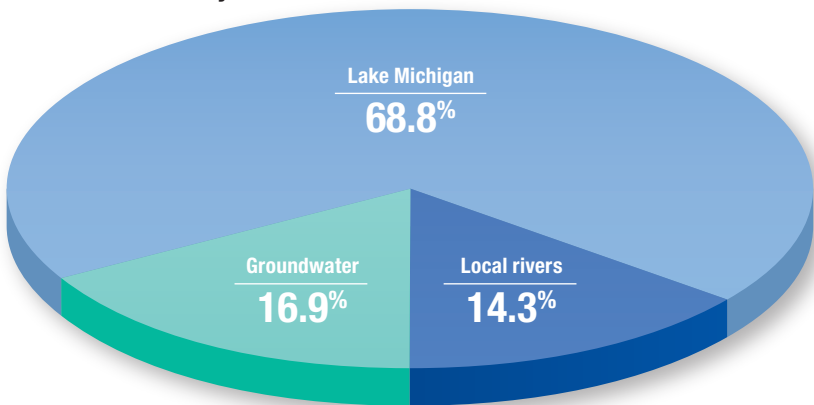
Water: Where we are

With groundwater, surface water, and Lake Michigan water all constrained, the *Water 2050* plan's primary strategy is to improve how water demand is managed. It emphasizes conservation, pricing, and the reuse of graywater and wastewater. (Graywater results from residential activities such as dish washing, laundry, and bathing.) The plan advocates a number of local conservation measures for municipalities, businesses, and households, including:

- *Replacing old toilets and clothes washers with new, high-efficiency ones*
- *Prohibiting practices that waste water*
- *Metering water use*
- *Auditing water systems to detect leaks and other inefficiencies*
- *Retrofitting residential plumbing*

Also, wintertime road salts and other contaminants are harming the region's shallow-aquifer system, according to the water plan, which recommends the use of alternate methods to de-ice roads. Among other key recommendations is for the region to conduct a public campaign to inform adults and school children of the need for water conservation. "Full-cost pricing" is also an option that the water plan presents for consideration. This method of managing demand would remove public subsidies to reflect the real expense of water, so business and residential consumers would pay for its delivery (not just for the water itself, as is current practice), which would be an incentive to use water efficiently.

2005 withdrawals by water source



Sources: B. Dziegielewski and F.J. Chowdhury, Southern Illinois University Carbondale; Chicago Metropolitan Agency for Planning

As part of a regional framework for water planning and management, the plan also recommends new “Conservation Coordinators” be designated at the municipal and regional levels, to be responsible for supporting the implementation of a comprehensive water-conservation program. These coordinators would work with public-water suppliers’ staff to analyze the benefits, costs, and water savings potential of numerous conservation measures.

Also as recommended in the plan, CMAP intends to collect data from various water suppliers, making new information available to stakeholder groups and the general public. By complementing the Illinois State Water Survey’s “water inventory program,” this information would help communities and water suppliers make informed choices about how to manage water demand and plan for the future.

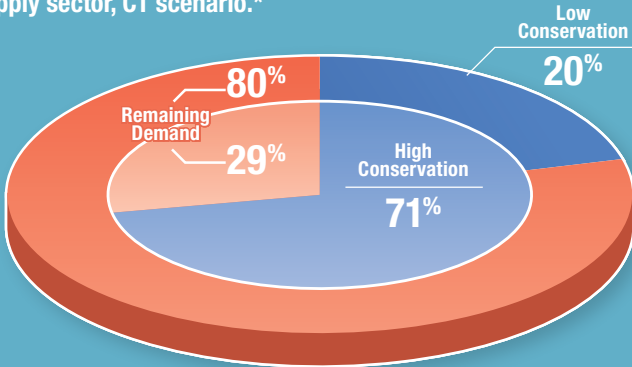
Groundwater modeling suggests that portions of the regional deep-bedrock aquifer are being dewatered. If that does not change, according to the *Water 2050* plan, this important water source will be compromised by 2050. The plan also cites climate change as a factor that could lead to increased water demand and reduced supplies.

To implement these and other recommendations, the region needs to begin a new era of coordinated water planning and management. In March 2010, CMAP and its partners convened the first Metropolitan Chicago Water-supply Summit. The event brought stakeholders together to start implementation activities and discuss how the water plan fits into a broader context of CMAP’s other water-resource activities and the **GO TO 2040** comprehensive regional plan as it neared completion.

“The RWSPG members have done the region a significant service in helping to craft this plan. Now, the region’s many stakeholders must begin taking immediate steps as called for in the regional water plan. CMAP is prepared to lead by coordinating these activities and providing technical assistance to water suppliers and consumers.”

— CMAP executive director Randy Blankenhorn

Potential of conservation to meet incremental demand in public supply sector, CT scenario.*



*2005-2050 Current Trends scenario, incremental demand = 648 mgd
 Source: Chicago Metropolitan Agency for Planning

Potential water savings associated with conservation measures at two tiers of implementation

Conservation Measures	Low Conservation (mgd)	High Conservation (mgd)
High Efficiency Toilets ²	15.0	74.8
Water Waste Prohibition ²	12.1	60.3
Metering ¹	30.3	31.5
Leaks and Audit Repair ¹	5.9	29.7
Residential Plumbing Retrofits ²	5.2	26.0
Commercial/Industrial ³	5.0	25.2
High-Efficiency Clothes Washers ²	3.2	16.1
Large Landscape ¹	1.0	5.1
Residential Water Survey ²	0.1	0.7
All Measures - Total	77.8	269.4

1. Low conservation applies to 10% of demand; high conservation applies to 50% of demand.
2. Low conservation applies to 10% of eligible households; high conservation applies to 50% of eligible households.
3. Low conservation applies to 10% of employees; high conservation applies to 50% of employees. Employee estimates only include public supplied commercial and industrial establishments.

Water: Where we're headed

The SIU report on water scenarios indicates that, without effective planning, water demand could increase as much as 64 percent by 2050, creating potentially serious shortages. Along with its many specific recommendations, the water plan indicates that actions supporting focused development — like transportation improvements, changes to zoning, urban design enhancements, etc. — would tend to improve the long-term availability of water in the region.

Water supply will therefore be an important factor in CMAP's **GO TO 2040** comprehensive regional plan, whose implementation begins in October 2010. The plan will be based on a diverse, coordinated set of strategies to address projected population growth of 2.8 million new residents by 2040, which has significant implications for transportation, housing, economic development, open space, the environment, and other quality-of-life issues. Its recommendations will guide development decisions and infrastructure investments that, cumulatively, will influence water use for decades to come.

For example, **GO TO 2040** will promote compact development patterns that have been shown to reduce water use. Also, infill and redevelopment will be priorities in the comprehensive plan, meaning that growth can be concentrated within areas of existing water infrastructure. In short, implementing **GO TO 2040**'s integrated planning strategies should be a high priority for groups and individuals seeking to promote the water plan's principles.

CMAP and its partners are proving they have the ability to overcome traditional barriers to regional collaboration. As with the water plan itself, the **GO TO 2040** plan will require considerable coordination across jurisdictions and geographic boundaries. Each stakeholder group has its own role in bringing the two plans' recommendations to life.

Adequate funding will be key, not only to address waste by upgrading and maintaining water infrastructure, but also to educate water providers, residents, and businesses about the need for conservation and coordination. A public information campaign is among the water plan's important recommendations, and a reliable source of funds is needed to ramp it up and sustain it. Likewise, CMAP will need support in its efforts to compile and share water-related data necessary for effective decision making.

In its three-year existence, the RWSPG demonstrated how interdependent the region's water suppliers and consumers are. Having established the water plan as a framework for stewardship of this important shared resource, those stakeholder groups must now take up the challenges that they themselves so carefully defined throughout the planning process.

About CMAP

The Chicago Metropolitan Agency for Planning (CMAP) is the comprehensive regional planning organization for the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. By state and federal law, CMAP is responsible for producing the region's official, integrated plan for land use and transportation. The agency's innovative **GO TO 2040** planning campaign will develop and implement strategies to shape the region's transportation system and development patterns, while also addressing the natural environment, economic development, housing, education, human services, and other factors shaping quality of life. See www.cmap.illinois.gov and www.GOTO2040.org for more information.

Water management recommendations for municipalities

- *Put full-cost pricing into effect*
- *Use non contaminating de-icing alternatives to road salt*
- *Designate a municipal "conservation coordinator"*

"The Illinois Department of Natural Resources is proud to have commissioned and funded this project as one of two key water supply planning projects in Illinois. This partnership has successfully produced important tools for communities to use in planning for future population and economic growth in northeastern Illinois."

— IDNR director Marc Miller



Chicago Metropolitan Agency for Planning

233 S. Wacker Drive, Suite 800
Chicago, IL 60606

www.cmap.illinois.gov

voice 312-454-0400

fax 312-454-0411

Images, left to right, courtesy of Albert Ellenich (www.ellenich.com/photos), CMAP staff, Marilyn L. Schweitzer

