

MEMORANDUM

To: Climate Committee
From: CMAP Staff
Date: Tuesday, February 11, 2025
Subject: Water Supply Planning
Purpose: Update on CMAP's water supply planning efforts
Action Requested: For information

CMAP seeks to update the Climate Committee on several new resources to guide water supply planning in northeastern Illinois. CMAP will share the results and methods used to develop the regional water demand forecast, provide an update on the Water Supply Sustainability Plan for the Northwest Water Planning Alliance, and share insights from a project investigating the Water Use Act of 1983 and the high capacity well review process. Key findings include:

- Water demand is declining in large portions of the region but is expected to increase in some locations with stressed groundwater sources.
- The State of Illinois lacks the governance structure to review new wells and manage withdrawals for long-term sustainability.
- Conservation and efficiency strategies have the potential to reduce demand and bring the region closer to a balance with sustainable withdrawals.

CMAP seeks to engage the committee in a conversation about the findings and how the work should evolve in the coming years to address the region's water challenges.

Project overview

Water resources are essential for sustaining economic prosperity, environmental and public health, and quality of life in the region. The leading drinking water sources in the region are Lake Michigan, groundwater aquifers, and the Fox and Kankakee Rivers. Each drinking water source faces a variety of challenges and opportunities.

CMAP has conducted water supply planning in the region since its formation and has partnered extensively with the Illinois Department of Natural Resources to advance efforts promoting sustainable use of our water supplies. These efforts have included the development of [Water 2050](#), a plan for avoiding imbalances between water supply and demand, as well as more recent work to forecast future water demand and coordinate partners to advance water conservation and coordination.

Guided by ON TO 2050's recommendation to [coordinate and conserve shared water supply resources](#), CMAP has engaged hundreds of stakeholders to build awareness of existing and

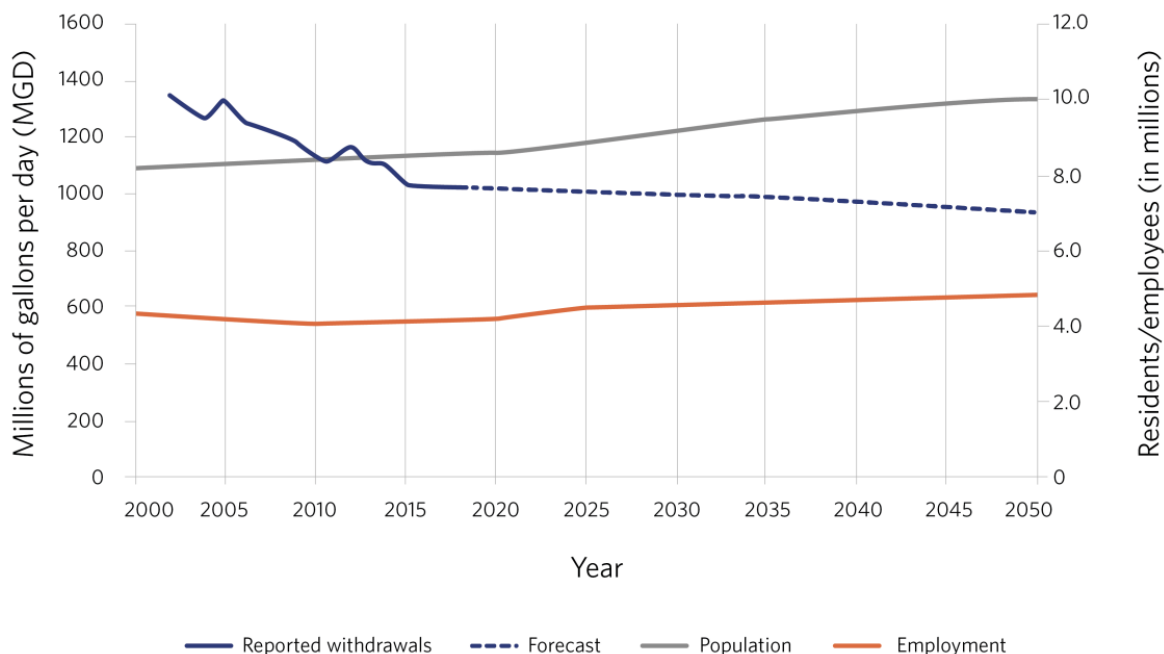
future water supply challenges and promote best practices to inform local decision-making to maintain our water supplies over the long term. CMAP has most recently worked on three projects to advance water supply planning in the region:

Update of the Regional Water Demand Forecast

Understanding future water demand is key to managing these resources sustainably. CMAP, Illinois-Indiana Sea Grant (IISG), and University of Illinois Extension recently updated the region’s water demand forecast to reflect the most recent population and employment projections. The forecast shows that water use is expected to continue declining due to steady advances in water conservation and efficiency that are outpacing population and employment growth. However, forecasted water demand will exceed available groundwater supplies in some areas.

CMAP’s 2022 Socioeconomic Forecast estimates that, by 2050, northeastern Illinois is projected to add more than 1.4 million residents and nearly 300,000 jobs. Despite this growth, total water demand is projected to decline. Total water withdrawals are estimated to reach 938 million gallons per day (MGD), an 8 percent decrease from 2018 levels. While declining water demand is a positive trend, there are still challenges.

Figure 1. 2024 regional water demand forecast and 2022 socioeconomic forecast



Source: CMAP and IISG, 2024 and CMAP 2022 socioeconomic forecast.

The [Illinois State Water Survey \(ISWS\)](#) developed sustainable supply values for each water source in the state. For groundwater, these values estimate the annual amount of water that can be pumped without causing further desaturation of deep aquifers or harming aquatic ecosystems due to reduced groundwater discharges to streams. At the county level, this data

allows the regional water demand forecast to identify areas where water demand is expected to exceed available sustainable supplies of water over the long term.

For the first time, CMAP compared water demand and sustainable supply estimates and the extent to which water demand is expected to exceed sustainable supply by 2050. Demand-to-sustainable supply ratios indicate several counties already, and are expected to continue to, exceed their sustainable supply estimates. Even for those counties where overall demand appears sustainable, the risk of localized challenges due to concentrated demand or unique geologic conditions exists in parts of Kane, Kendall, McHenry, and Will counties. Water quality concerns further complicate the picture, adding a layer of uncertainty not reflected in demand-to-supply ratios. In some areas, even where water supplies seem abundant, poor water quality can make the resource effectively unusable due to the high treatment costs.

The updated water demand forecast and supporting data enable counties, municipalities, water utilities, and residents to have informed discussions about supply and demand challenges and make data-driven decisions — the ISWS uses this data to inform its own water supply conditions modeling. The [CMAP DataHub](#) provides access to regional, county, and sector demand forecasts, reported water withdrawals, and current and projected population and employment data.

Developing a Water Supply Sustainability Plan

CMAP, in partnership with the IISG and close coordination with the ISWS, is working with the Northwest Water Planning Alliance — a coalition of three counties and five councils of government representing over 80 communities — to create a [Water Supply Sustainability Plan](#).

The plan serves as a roadmap for communities seeking to take voluntary steps toward ensuring the long-term sustainability of drinking water sources. While there are multiple dimensions of sustainability, the plan focuses on water availability and measuring the direct water savings that community water suppliers can achieve through water conservation and efficiency efforts. It offers critical insights into the NWPA region's water supply and current future demand using the ISWS sustainable supply values and regional water demand forecast, outlines actionable water conservation and efficiency strategies to help reduce demand, and provides guidance on how municipalities and public water utilities can take local action to address their specific needs.

Few communities in the NWPA region engage in active water conservation, which refers to intentional, direct investments or actions to reduce water consumption and enhance water efficiency. Yet most water used in the NWPA region — 81 percent or 131.5 MGD — is provided by public water systems managed by a municipality or a private company. This presents a significant opportunity for communities in the NWPA region to be leaders in water conservation and sustainable water management and effectively reduce demand to ensure a sustainable supply for their residents and businesses.

Recognizing that municipalities and local water utilities are the primary users, the plan sets forth a series of water conservation and efficiency strategies that they can implement and estimates of their potential savings to illustrate what is possible within the region:

- Residential retrofits focused on the adoption of water-efficient appliances and fixtures
- Outdoor landscape efficiency
- Water efficiency in new development focused on WaterSense Homes certifications
- Water loss control within public water utilities
- Commercial, institutional, and industrial water conservation programming

If NWSA communities with public water systems fully implemented the five strategies, they could reduce regional water demand by up to 38.4 million gallons per day (MGD), significantly alleviating stress on existing water sources, narrowing the gap between demand and sustainable supply, and reducing infrastructure and operational costs. Particularly, demand on groundwater sources could be reduced by 23.3 MGD, which could help some counties substantially address the imbalance between demand and sustainable supply estimates.

Water loss control measures, replacing residential water fixtures with more efficient ones, and building water-efficient, single-family residential development broadly implemented throughout the NWSA region can achieve the greatest savings, yet vary by county based on water use, housing stock, and projected growth. For example, in Kane and Lake counties, water loss control techniques are estimated to provide the greatest savings; in Kendall and McHenry counties, which are anticipated to see a sizeable increase in population, constructing water-efficient, single-family residential development would provide the greatest savings.

Figure 2. Potential water savings by NWSA counties and the five prioritized water conservation and efficiency strategies, in MGD.

County	Residential retrofits savings estimates	Outdoor landscape efficiency savings estimates	New residential development savings estimates	Water loss savings estimates	CII conservation programming savings estimates	Total
DeKalb	0.6	0.1	0.4	0.7	0.3	2.1
Kane	3.2	0.3	2.9	4.3	2.1	12.7
Kendall	0.6	0.1	1.3	0.8	0.4	3.2
Lake	3.9	0.4	1.4	5.5	2.6	13.8
McHenry	1.8	0.2	2.0	1.9	0.9	6.7
NWSA region	10.1	1.1	7.9	13.1	6.2	38.4

Note: These are the water savings that can be achieved under the high water conservation and efficiency scenario (100 percent program participation). CII building data was not available for DeKalb County. Estimates are based on DeKalb’s non-residential base water use and CII building share equivalent to Kendall County.

Nationally, water loss accounts for 20 percent of a public water utility’s water use. Water loss control can include measures to address real losses from distribution system leakage and storage tank overflow, as well as apparent losses from billing and meter reading errors and unauthorized consumption. If the NWSA region broadly implemented water loss control measures that kept each public water utility’s water loss no greater than 10 percent of its net annual pumpage, the region could achieve 13.1 MGD in water savings.

Residential water use can also be a significant share of a public utility’s water use. Residential indoor water use often accounts for the largest share of a community’s total water demand at

48 percent nationally. Water use inside a home can make up nearly two-thirds of residential water use annually. If single-family homes in the NWP region that rely on a water utility replace the three most common and water-intensive devices – toilets, showers, and faucets – with more water-efficient ones, the region could achieve 10.1 MGD in water savings. Communities will need to determine which strategies work best for them and offer the greatest savings.

The plan calls upon NWP communities to take local action to understand water supply and demand within the context of local water source and infrastructure conditions and adopt water conservation strategies that align with their unique local context. By volunteering to implement its recommendations, NWP communities will take a significant step toward ensuring that water remains a reliable resource for generations to come.

Securing Illinois' Groundwater Future

Despite voluntary conservation actions that can be taken by individual communities, the region's groundwater sources are subject to withdrawals that exceed their natural recharge rates. Illinois' current legal framework, established by the Water Use Act of 1983, fails to address these challenges, putting community water supplies at risk. Recognizing the urgency, [Illinois' 2022 State Water Plan](#) calls for updates to the state's 1983 Water Use Act to align governance with today's water challenges.

CMAP recently published [Securing Illinois' Groundwater Future](#), which examines the state's 1983 Water Use Act, assesses the high-capacity well review process, and draws insights from groundwater governance practices in neighboring states. The report highlights the act's limitations: While it introduced the reasonable use doctrine, it failed to establish a comprehensive groundwater management strategy. High-capacity well reviews — critical tools for ensuring sustainable withdrawals — have been largely unimplemented since the 1990s due to insufficient funding and administrative gaps. These shortcomings leave Illinois' groundwater vulnerable to unchecked withdrawals, with long-term sustainability taking a backseat to immediate needs.

CMAP offers several recommendations to modernize Illinois' groundwater management framework, ensuring a balance between economic growth and the stewardship of vital water resources:

- First, the state must expand the objectives of the Water Use Act to include long-term groundwater supply management.
- Second, it should provide dedicated funding for the high-capacity well review process and streamline coordination among state agencies.
- Finally, improving water-use reporting systems with standardized data collection and compliance mechanisms will enhance planning efforts and transparency.

What's next

In the coming year, CMAP and IISG will host a workshop series focused on advancing education to municipalities on key water conservation and efficiency strategies. The goal of the envisioned series of workshops is to train water professionals, local leaders, and community members on factors impacting water availability and equip them to ensure continued reliable, safe, and

affordable water supply. This work will help implement the NWPA Water Supply Sustainability Plan and is relevant to municipal stakeholders in the broader CMAP region.