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# Northeastern Illinois Regional Water Supply Plan

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*L O O K I N G   O U T   T O   2 0 5 0*

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# Chapter 1 | Introduction

This document is in fulfillment of Executive Order 2006-1 issued by the Governor of Illinois. Executive Order 2006-1, issued in January 2006, called for a comprehensive program for state and regional water supply planning and management, a strategic plan for its implementation, and development of Regional Water Supply Plans in two Priority Water Quantity Planning Areas. The eleven counties of northeastern Illinois is one of those two priority planning areas and the plan that follows captures the work performed during the last three years.

The report is divided into 4 sections plus appendices. Chapter 1/ Introduction provides the reader with the information necessary for understanding the past events that lead to today's planning activity. Background information is also provided on the regional planning body and process that led to this plan. Chapter 2 explores the institutional framework for planning/management and a host of issues that collectively provide context for plan recommendations. Those recommendations follow in Chapters 3 and 4 where the former explores the relatedness between land use decisions and water resources, while the latter offers other strategies for managing water demand and augmenting supplies. Chapter 5 provides ideas related to alternate or additional institutional mechanisms for water governance going forward.

The reader is also advised to review two documents that served to inform the planning process: 1) Regional Water Demand Scenarios for Northeastern Illinois: 2005-2050, and 2) Regional Groundwater Modeling for Water Supply Planning in Northeast Illinois. These two reports significantly contribute to this document and contain valuable water-related information. Full reference information for these documents is provided in footnotes below.

## Background

### State Planning

Water supply planning in the state of Illinois has a long history and the Illinois State Water Survey has contributed greatly to it since its founding in 1895<sup>1</sup>. Planning activity has very often been initiated by a governor's directive or executive order. Governor Otto Kerner, Jr., for example, launched such an effort in 1965 and the resultant 1967 plan, *Water for Illinois — A Plan of Action*, offered among its recommendations a regional approach and structure for water resources management.<sup>2</sup>

In 1980, Governor James R. Thompson appointed a task force to produce a new state water plan. The Illinois State Water Plan Task Force formed five regional advisory councils, addressed problems of statewide importance, and has provided a coordination role among state agencies ever since.<sup>3</sup> Both the Illinois State Water Plan Task Force as well as the Illinois Drought Response Task Force, a group of state agency representatives that are convened by the Governor as needed, are managed through the Illinois Department of Natural Resources, Office of Water Resources, Division of Program Management.<sup>4</sup>

With the dawn of the 21st century, Governor George H. Ryan established a Governor's Water Resources Advisory Council (WRAC) in 2000 to study water resource usage including water usage by peaker-power plants. (The WRAC was somewhat short lived as it was subsequently abolished by Governor Blagojevich in his plans to reduce state spending and close an estimated \$5 million budget shortfall for fiscal years 2003 and 2004.) Governor Ryan followed with Executive Order 2002-5<sup>5</sup> that invoked the Illinois Groundwater Protection Act, 415 ILCS 55/4, and the Interagency Coordinating Committee on Groundwater (ICCG) to designate a subcommittee to develop an integrated groundwater and surface water resources agenda and assessment report. The Subcommittee on Integrated Water Planning and Manage-

1 Derek Winstanley, Nani G. Bhowmik, Stanley A. Changdon, and Mark E. Peden. 2002. History of the Illinois State Water Survey, pp. 121-132 in J.R. Rogers and A.J. Fredrich (ed.), Proceedings and Invited Papers for the ASCE 150th Anniversary (1852-2002), November 3-7, 2002, Washington, DC, ASCE, Reston, VA.

2 Developed by the Illinois Technical Advisory Committee on Water Resources, Springfield, IL, 1967, as cited in *Water Quantity Issues Facing Illinois*; a paper presented by Derek Winstanley to the 2002 Illinois Environmental Conference of the Illinois State Bar Association, Chicago, August 16, 2002.

3 Derek Winstanley, 2008. A brief history of water-supply planning in Illinois (draft). Unpublished manuscript.

4 For more information, visit <http://www.dnr.state.il.us/owr/programdev.htm>

5 Executive Order for the Interagency Coordinating Committee on Groundwater to Establish a Water Quantity Planning Program. Executive Order Number 5 (2002). Executive Department, State of Illinois, Springfield. April 22, 2002.

6 Report to the Interagency Coordinating Committee on Groundwater from the Subcommittee on Integrated Water Planning and Management With Recommendations Pursuant to Executive Order Number 5, 2002. December 20, 2002.

7 *Ibid.* The six-point agenda states: 1) By March 1, 2003 formally establish an interim water quantity planning and management process and develop a draft strategic plan for water quantity planning and management statewide. 2) By April 1, 2003 provide agency and public review of the draft strategic plan for water quantity planning and management, modify as necessary, develop an implementation plan, seek necessary funding, and begin implementation on July 1, 2003. 3) Strengthen the scientific basis for planning and management by funding needed scientific studies that answer the following questions: (see report). 4) Develop a package of financial and technical support for and encourage the formation of regional water management consortia in Priority Water Quantity Planning areas which can be identified using existing information. 5) Compile available information and make it useful and easily accessible. 6) Implement a phased approach in establishing a sound scientific basis and an administrative framework for water quantity management.

ment issued their report in December 2002<sup>6</sup>. Their report featured the 12 consensus principles developed by the WRAC and are as follows:

1. Better science and more funding for science is needed.
2. A system for identifying water resource problem areas is needed.
3. Water resource problem areas should not be too large; could be based on ground or surface water sources or both; should be based on supply and demand; a drop below sustainable yield should be a criteria; pollution could be a criteria.
4. Need to see details of how such areas will be identified both short-term, based on existing information, and long-term, as better data become available.
5. Emphasize regional water management authorities—boundary should have some relationship to scale of the water resource (watershed and/or aquifer boundary).
6. State's role: for later resolution; should support, provide science, establish or appoint regional authorities.
7. Is there a role for water authorities established under the Water Authorities Act?
8. Phased approach to implementation would be received better by a broader group of interests.
9. Immediately begin pilot programs in "willing" areas; pilots programs should be site-based and located in problem areas.
10. Sunsets should be established for #8 and #9.
11. There should be an ongoing role for the Water Resources Advisory Committee in developing the details associated with establishing regional water management authorities.
12. Both groundwater and surface water should be considered.

Together with the Groundwater Advisory Council, the ICCG was directed to use the subcommittee's six-point agenda<sup>7</sup> and report, including the principles enumerated above, to establish a water-quantity planning procedure for the State. It is against this historical backdrop that Governor Rod Blagojevich issued Executive Order 2006-1

## Regional Planning

Planning for the regional water supplies of northeastern Illinois dates back to 1966 when the Northeastern Illinois Planning Commission (NIPC) published Technical Report No. 4: *The Water Resources in Northeastern Illinois: Planning its Use*.<sup>8</sup> That report was updated in 1974 with Technical Report No. 8: *Regional Water Supply Report*. Readers of this latter report are bound to discover that it features several principle findings and strategy statements that continue to resonate today.

More recently, representatives from four planning agencies in Illinois, Indiana, and Wisconsin, signed the Wingspread Multi-State Regional Accord in 2002. The Wingspread Accord was an agreement between NIPC, Southeastern Wisconsin Regional Planning Commission, Northwestern Indiana Regional Planning Commission, and the Chicago Area Transportation Study to cooperate and coordinate more closely on matters concerning regional interdependence. In addition to promoting integrated regional planning and economic development in an expanded spatial context, the Accord spawned the Southern Lake Michigan Regional Water Supply Consortium (SLMRWSC). The mission of the SLMRWSC is to advance a more comprehensive regional approach to sustainable water supply planning and management. Consortium activity has tapered off considerably since the "Straddling the Divide" conference held in February 2005, but has the potential to revive itself through the Wingspread Accord at any time.

In 2002, NIPC adopted the *Strategic Plan for Water Resource Management*. This plan presented the work of over 100 experts from the region who served on an advisory committee and three task forces: stormwater and flooding; water quality; and water supply. Several of the recommended water-supply strategies featured in the *Strategic Plan* have either been partially implemented or remain viable today.

Though a subregional-scale effort, the Kane County Water Supply Study has also played an important role in the current regional planning initiative.<sup>9</sup> Spurred by concern that rapid population growth could strain local water supplies, particularly groundwater, the countywide effort involved the Illinois State Water Survey and State Geological Survey in a study of shallow groundwater, deep groundwater, and the Fox River. Beginning in 2002, the multiple-year study has led to new knowledge of the hydrogeology of Kane County that is now one of the best understood in the nation.

Of consequence to the region, the Kane County study provides a science-based and data-rich foundation for a much improved understanding of the deep-bedrock aquifer (i.e. Ansell Unit, Ironton-Galesville Unit, and Mt. Simon Unit) that lies beneath the entire 11-county planning region. Additionally, the study provided an enhanced understanding of the shallow aquifer system (i.e. Quaternary Unit and Shallow-Bedrock Aquifer) beneath the Fox River, and new knowledge of Fox River water accounting (i.e. effects of discharges and withdrawals on the spatial and temporal characteristics of flow). Thus, the State Surveys were prepared by this study (and previous work) to address the broader regional impacts of ongoing and/or increased groundwater withdrawals. A new understanding of the impacts of increased Fox River water withdrawals and discharges on low flow has also been achieved.

Other actors in the region have been vocal as well about the need for a more substantive program for addressing regional water needs.<sup>10</sup> Most recently and in the midst of a drought that started in 2005, Governor Rod Blagojevich issued Executive Order 2006-1<sup>11</sup> enumerating the following actions to be executed:

8 Northeastern Illinois Metropolitan Area Planning Commission's *The Water Resource in Northeastern Illinois: Planning its Use. Technical Report No. 4.* Prepared by John R. Sheaffer, Project Director and Arthur J. Zeizel, Asst. Project Director. June, 1966.

9 Strategy for Developing a Sustainable Water Supply Plan for Kane County. 2007. [http://www.co.kane.il.us/priorityPlaces/docs/Strategy\\_for\\_Developing\\_a\\_Sustainable\\_Water\\_Supply\\_Plan\\_for\\_Kane\\_County.pdf](http://www.co.kane.il.us/priorityPlaces/docs/Strategy_for_Developing_a_Sustainable_Water_Supply_Plan_for_Kane_County.pdf)

10 Troubled Waters: Meeting Future Water Needs in Illinois. Campaign for Sensible Growth, Metropolitan Planning Council, and Openlands Project. Undated.

11 2006-1: Executive Order for the Development of State and Regional Water-Supply Plans. Issued by Governor Rod R. Blagojevich: January 9, 2006.

12 For more information about the regional planning process in northeastern Illinois, visit [http://www.cmap.illinois.gov/water-supply/default.aspx?ekmsel=c580fa7b\\_8\\_18\\_3314\\_3](http://www.cmap.illinois.gov/water-supply/default.aspx?ekmsel=c580fa7b_8_18_3314_3)

13 See Texas Water Code – Section 16.053. Regional Water Plans.

Consistent with the authority granted to the Department of Natural Resources under the Rivers, Lakes, and Streams Act, 615 ILCS 5/5 et seq. and the Level of Lake Michigan Act, 615 ILCS 50/1 et seq., the authority of the Department of Natural Resources' Office of Water Resources under 20 ILCS 801/5-5, the Office of Water Resources, in coordination with the State Water Survey, shall:

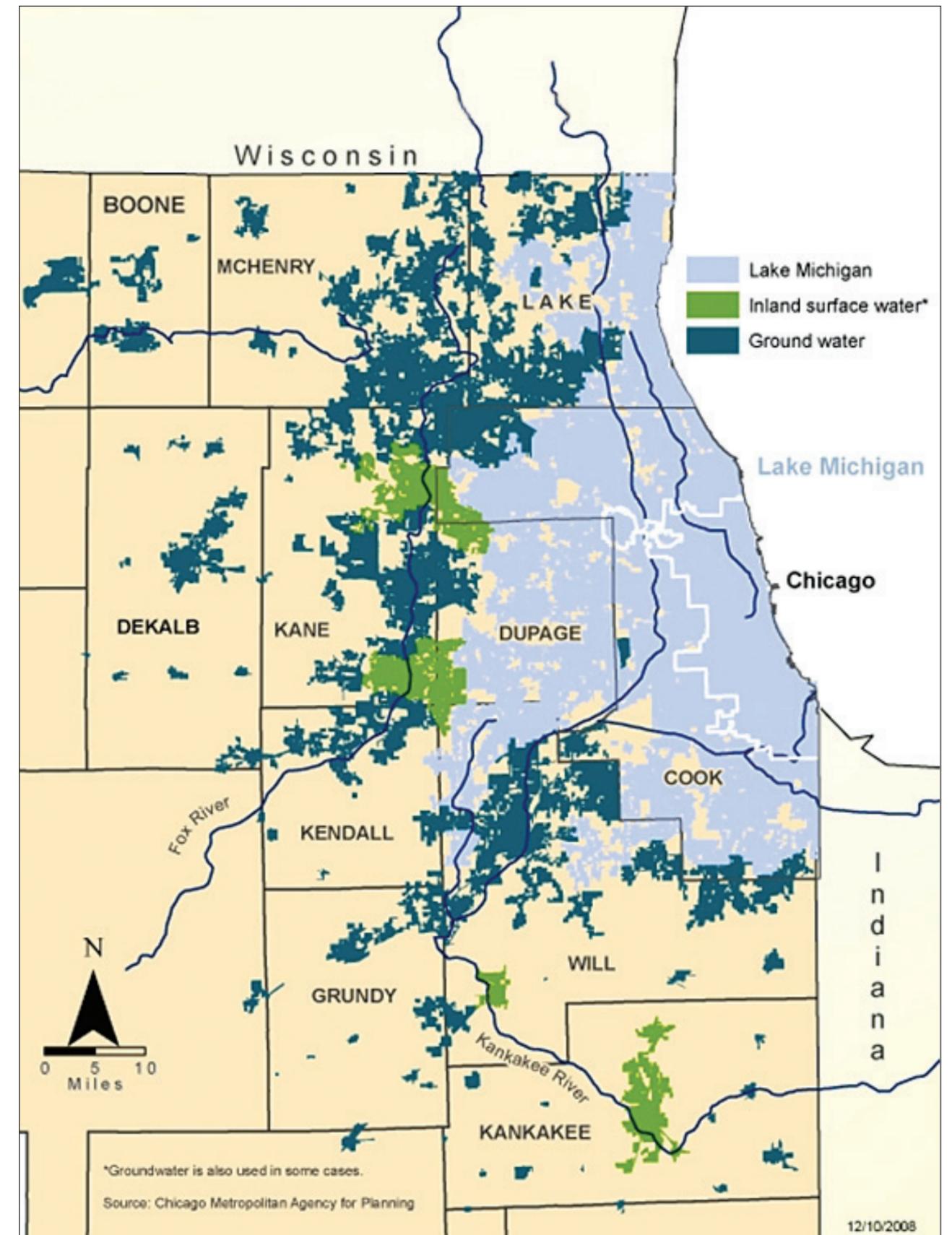
1. Define a comprehensive program for state and regional water supply planning and management and develop a strategic plan for its implementation consistent with existing laws, regulations and property rights;
2. Provide for public review of the draft strategic plan for a water supply planning and management program;
3. Establish a scientific basis and an administrative framework for implementing state and regional water supply planning and management;
4. Develop a package of financial and technical support for, and encouragement of, locally based regional water supply planning committees. These committees, whether existing or new entities, shall be organized for participation in the development and approval of regional plans in the Priority Water Quantity Planning Areas;
5. By December 31, 2006, ensure that Regional Water Quantity Plans are in process for at least two Priority Water Quantity Planning Areas.

One such Priority Water Quantity Planning Area is the 11-county northeastern Illinois region (Figure 1). During the summer of 2006, the Illinois Department of Natural Resources, Office of Water Resources, approached the Chicago Metropolitan Agency for Planning (CMAP) with a request to lead the new planning effort in northeastern Illinois. CMAP agreed and followed with a scope-of-work document that was ultimately incorporated into a three-year contract.<sup>12</sup> The scope-of-work included an agreement to 1) create and facilitate the work of a new planning body and to develop a regional water supply plan, 2) study regional water demand, 3) conduct outreach and education, and 4) provide project management and act as fiscal agent.

### Northeastern Illinois Regional Water Supply Planning Group

CMAP's commitment to orchestrate the regional planning process included the creation of a new planning entity that was to be both diverse and representative of key stakeholder groups in the region. In addition to input from planners throughout the region and best professional judgment, the State of Texas model for stakeholder representation was also considered during development of the structure and composition of a regional planning body.<sup>13</sup> In November 2006, an Open Forum was held in Oak Brook, Illinois to publicly launch the regional planning initiative. The afternoon session organized people into seven interest groups that were identified for representation on the regional planning body. Each group was facilitated to discuss and reveal those issues that were most important to them. This information served as a useful starting point for matters that the emerging planning process could be sensitive to and address as appropriate.

Figure 1. Source of water by municipality in 11-county planning region



14 The seat for Cook County Government remained open as a representative was never appointed.

15 Operational Guidelines: Regional Water Supply Planning Group of Northeastern Illinois. May 23, 2008. <http://www.cmap.illinois.gov/WorkArea/showcontent.aspx?id=9644>

The following month, seven nonelected-official groups were reconvened at the offices of CMAP for purposes of selecting delegates to represent their constituencies. For the county government delegates, county board chairs received a letter from CMAP asking that either they appoint themselves or another board member to represent the interests of county government on the emerging planning body.<sup>14</sup> Delegates to represent municipal government/municipal water suppliers were appointed by the appropriate Council of Government (COG). Upon completion of this process, the Northeastern Illinois Regional Water Supply Planning Group (RWSPG) was formed to be the representative body for deliberations and water supply plan recommendations. Thus, CMAP and regional partners met a requirement of EO 2006-1 that a plan would be “in process” by the end of 2006.

The RWSPG is designed to be composed of thirty-five delegates. Delegates represent the following stakeholder-interest groups:

1. academia and public interest in regional planning (2)
2. agriculture (2)
3. business, industry, and power (2)
4. conservation and resource management (2)
5. county government (11)
6. environmental advocacy (2)
7. municipal government and municipal water suppliers (10)
8. real estate and development (2)
9. wastewater treatment and nonmunicipal water suppliers (2)

Most stakeholder groups attracted a large and diverse list of participants and it was the job of delegates to communicate regularly with their constituency. Meetings were open to the general public and typically included a sizable and diverse audience.

The RWSPG developed Operational Guidelines<sup>15</sup> and has generally met each month beginning in January 2007 and continuing through June 2009 while taking a summer break during the month of August. The RWSPG goes about its business using a modified-consensus decision making process. Group membership and attendance can be found in Appendix A. The RWSPG is advisory in nature, but provides an important forum for discussion and an experimental structure for regional-scale decision making.

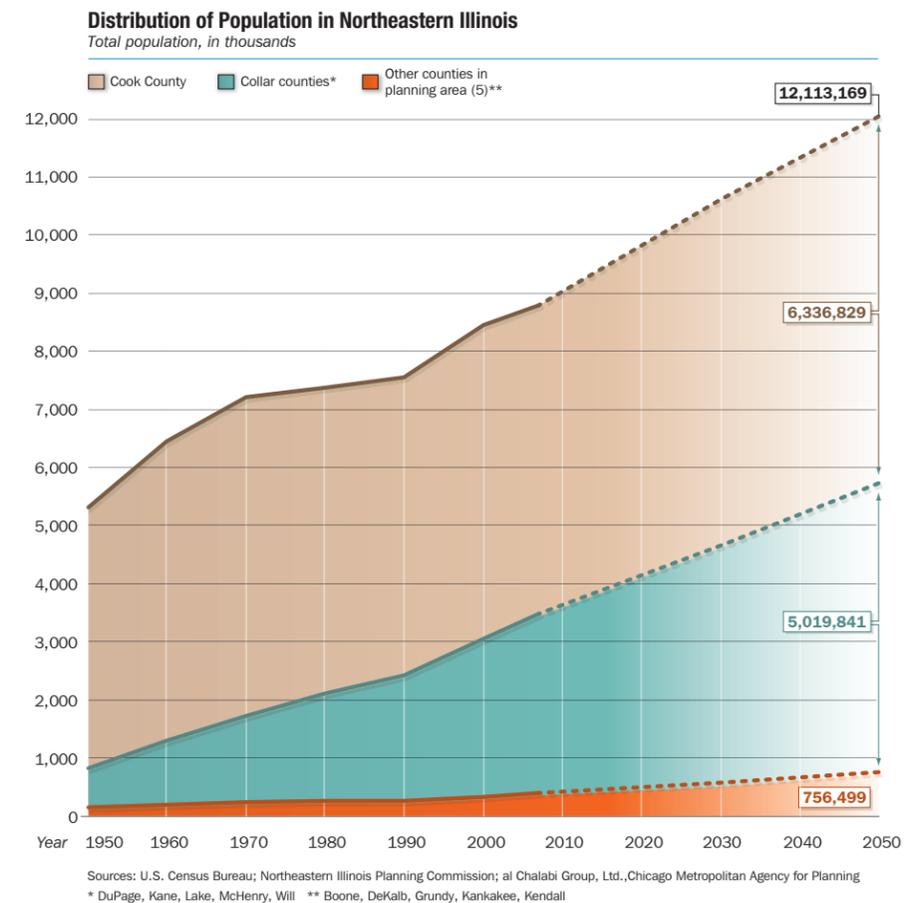
## Purpose

Executive Order 2006-1 acknowledges “increasing demands on Illinois’ water resources” along with “impacts of drought” as potential sources of conflict among water users and thus, partial justification for the order to pursue new state and regional water supply planning and management. Any future increase in demand for water can largely be attributed to population growth, the majority of which in the state is taking place in northeastern Illinois.

Population growth in northeastern Illinois has historically been robust. Figure 2 illustrates both the history of population growth and projections to 2050 in the northeastern Illinois water planning region. The graphic indicates that for the 11-county region, population grew 58% during the last half of the 20th century to 8,418,387 persons in 2000. Furthermore, population growth has been projected by the Northeastern Illinois Planning Commission and others to grow 26% from 2000 to 2030 to 10,635,428 persons.<sup>16</sup> Extrapolation of that 30-year population projection to 2050 leads to a possible 36 - 64% growth in water demand<sup>17</sup> to serve as many as 12,113,169 thirsty people at mid-century.

Given the known constraints on water sources in the region, population growth projections suggest that it would be foolish to assume that water will always remain relatively abundant as it has in the past. Executive Order 2006-1 expresses an intention, therefore, to avoid adverse impacts to the health of the State’s citizens, environment, and economy, and assess water supplies through a sound planning process to ensure responsible, economically viable, and secure water supply development.

**Figure 2. Population growth and projections in the 11-county NE IL water planning**



16 NIPC projected population for their 6-county planning region following a robust and accepted methodology that includes endorsement from the counties and municipalities involved. To these data were added growth projections for the other 5 counties as developed by the State of Illinois.

17 B. Dziegielewski and F.J. Chowdhury. 2008. Regional Water Demand Scenarios for Northeastern Illinois: 2005-2050. Project Completion Report. Southern Illinois University Carbondale. Available at: <http://www.cmap.illinois.gov/WorkArea/showcontent.aspx?id=10294>

The purpose of the regional planning effort is also pretty well captured in the adopted mission statement of the RWSPG:

To consider the future water supply needs of northeastern Illinois and develop plans and programs to guide future use that provide adequate and affordable water for all users, including support for economic development, agriculture, and the protection of our natural ecosystems.

In support of the purpose of this plan, the RWSPG adopted the following goals:

1. Ensure water demand and supply result in equitable availability through drought and nondrought conditions alike.
2. Protect the quality of ground- and surface water supplies.
3. Provide sufficient water availability to sustain aquatic ecosystems and economic development.
4. Inform the people of northeastern Illinois about the importance of water-resource stewardship.
5. Manage withdrawals from water sources to protect long-term productive yields.

The plan that follows is for a region that has been historically considered relatively water rich and where issues of scarcity have been rare to nonexistent. Today, new allocations of Lake Michigan water have been established to meet the needs of three-quarters of the regional population to 2030. Elsewhere in the region, however, groundwater withdrawals are raising new concerns. For example, the deep-bedrock aquifer is being mined (i.e. withdrawal rates exceed natural recharge rates), shallow-well withdrawals are known to be reducing natural groundwater discharge to streamflows throughout the Fox River Basin being modeled, and changes to deep-bedrock water quality (i.e. elevated concentrations of arsenic, barium, radium, and salinity) are possible before 2050.<sup>18</sup> Thus, the region must carefully examine the impacts of water use, recognize the uneven demand/supply circumstances where they exist, and take steps to resolve or avoid potential water supply and water demand imbalances.

This plan acknowledges potential imbalances and includes recommendations to help in resolving or avoiding them. The plan is the outcome of a three-year planning effort that has brought new and much needed focus on the relationship between regional prosperity and dependence on water; the prime ingredient to all things living.