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Water Supply Planning in Northeastern Illinois: A Regional Approach

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September 2, 2009

NE IL Regional Water Supply Planning Group (RWSPG)

Stages of Group Development -

* Forming (*last qtr. 2006*)
* Storming (2007)
* Norming (2008)
* Performing (*2009*)
* Adjourning (November *'09*)

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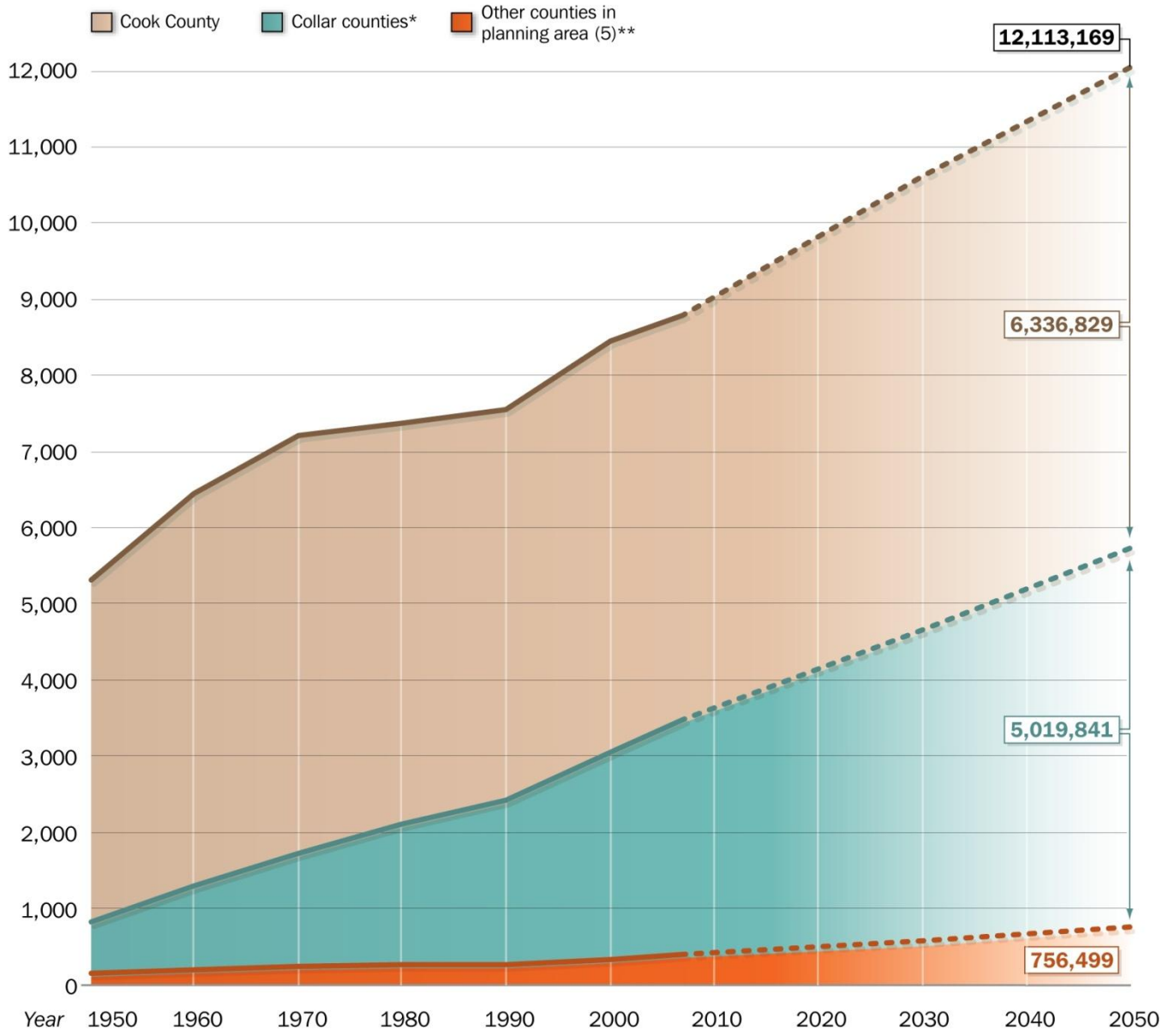
*Groundwater is also used within these areas in some cases.

Source: Chicago Metropolitan Agency for Planning

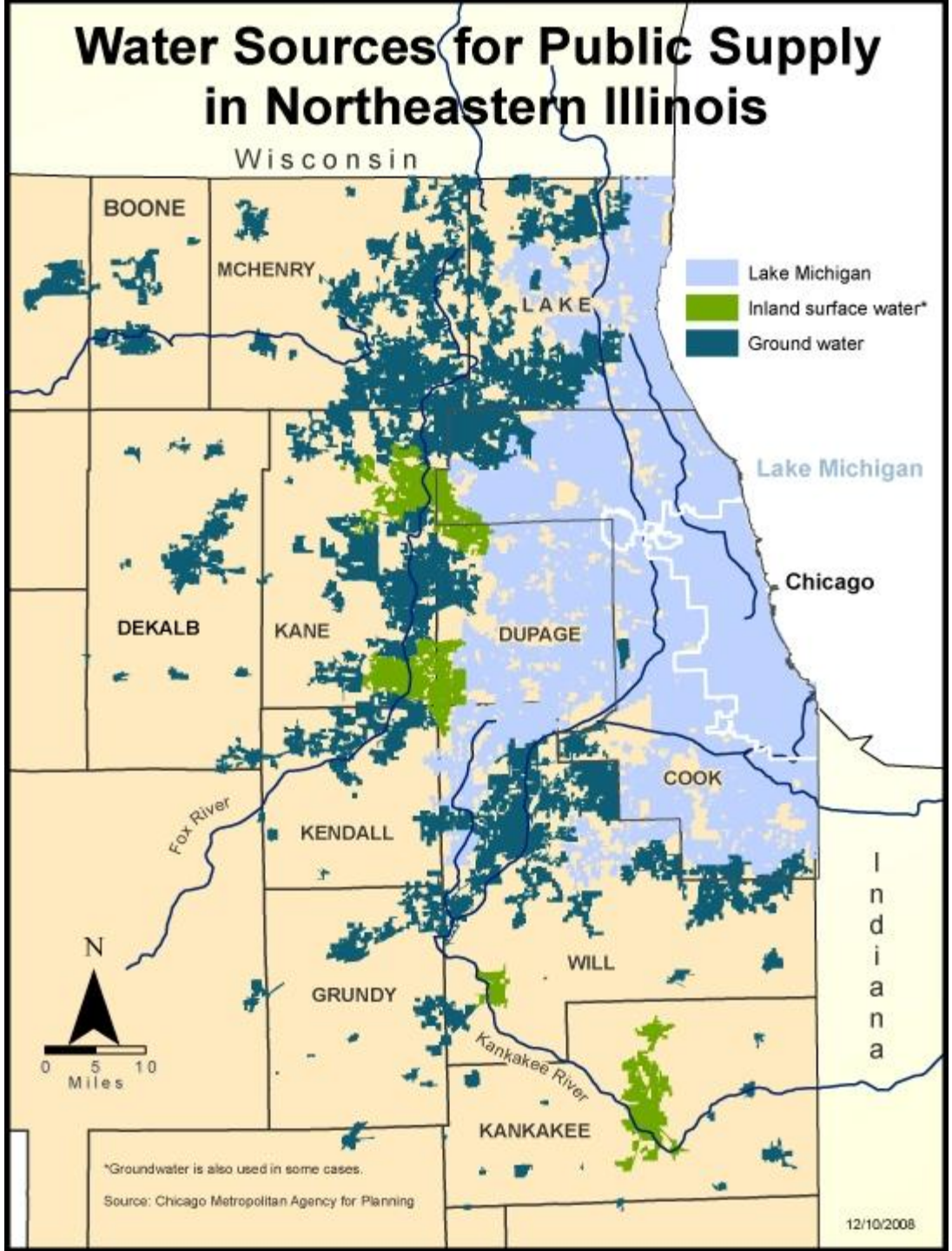
Distribution of Population in Northeastern Illinois

Total population, in thousands



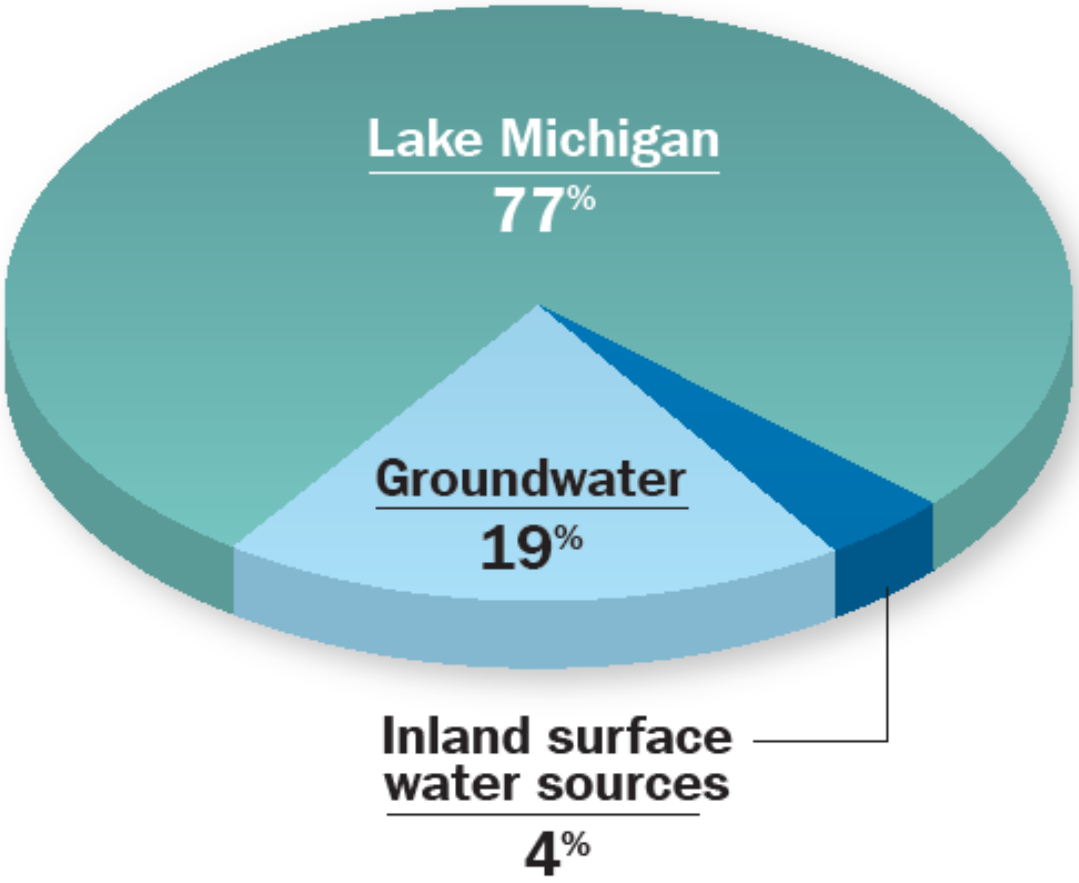
Sources: U.S. Census Bureau; Northeastern Illinois Planning Commission; al Chalabi Group, Ltd.,Chicago Metropolitan Agency for Planning

* DuPage, Kane, Lake, McHenry, Will ** Boone, DeKalb, Grundy, Kankakee, Kendall


Water Sources for Public Supply in Northeastern Illinois
Wisconsin
BOONE
MCHENRY
LAKE
Lake Michigan
Inland surface water*
Ground water
Lake Michigan
Chicago
DEKALB
KANE
DUPAGE
COOK
Fox River
KENDALL
Indiana
N
WILL
GRUNDY
0 5 10
Miles
Kankakee River
KANKAKEE
*Groundwater is also used in some cases.
Source: Chicago Metropolitan Agency for Planning
12/10/2008

Sources of Drinking Water for Northeastern Illinois

11-county region population, 2000



Source: CMAP

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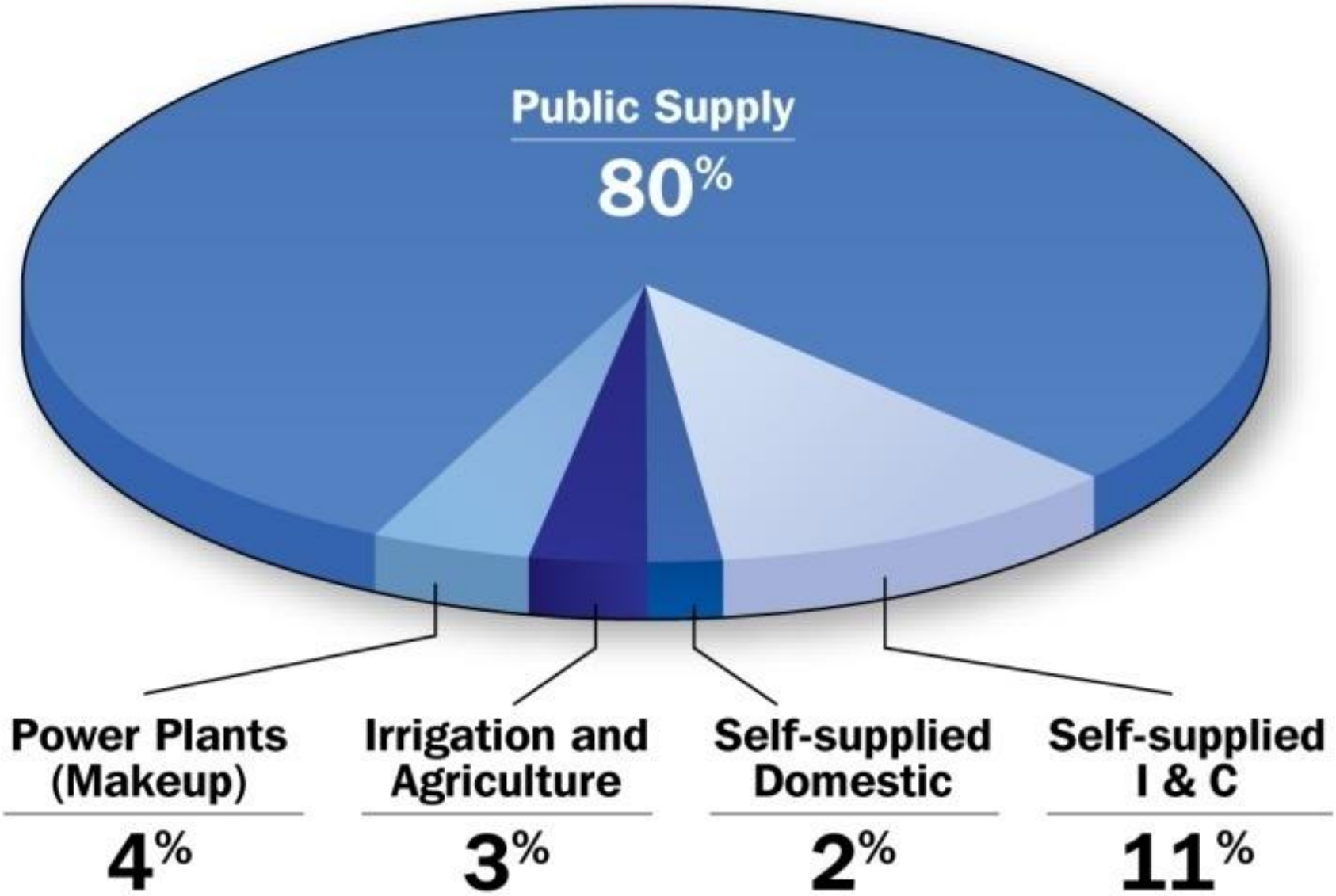
Water-Demand Scenarios

1) Current Trends / Reference – trends that approximate recent history

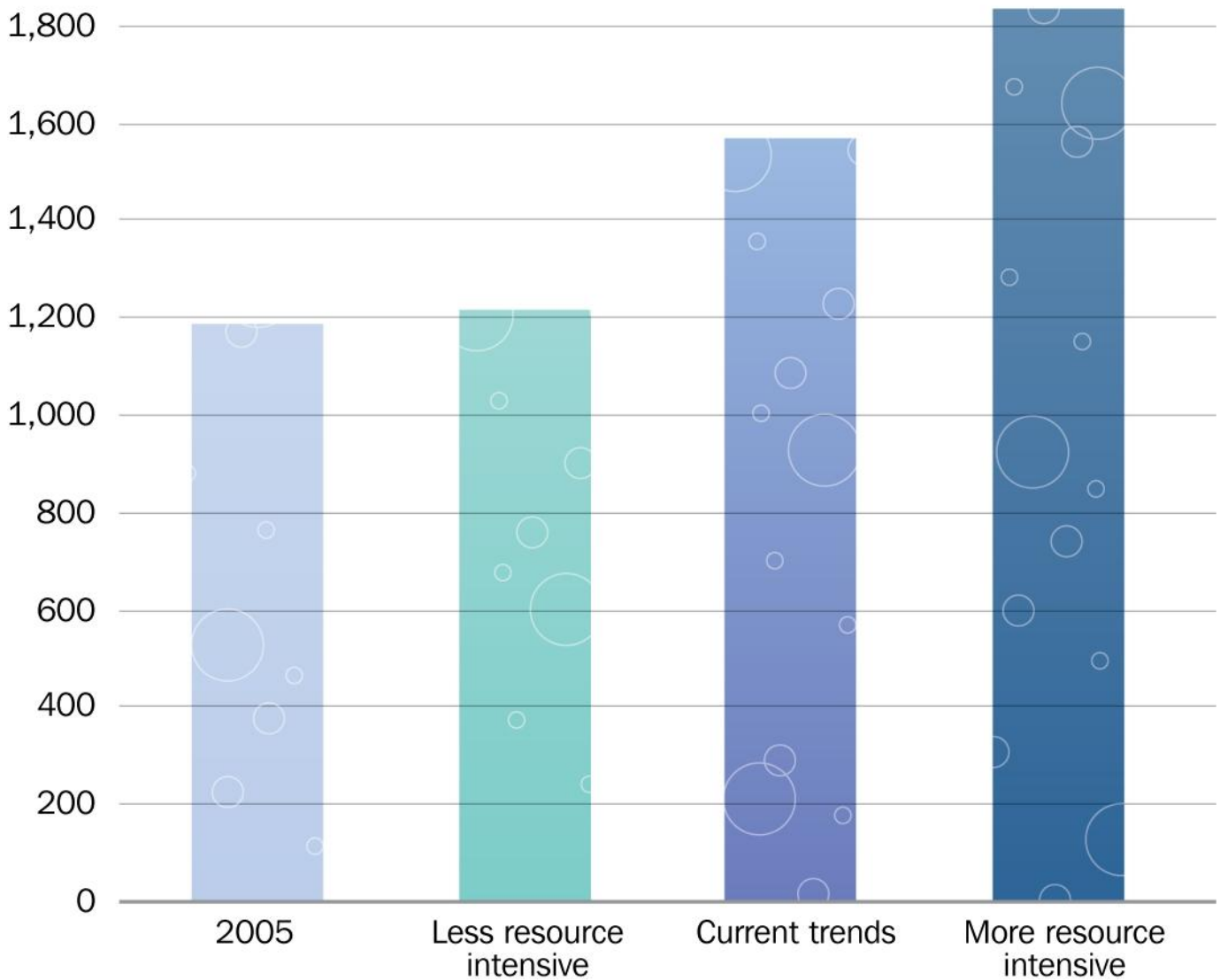
2) Less Resource Intensive – reduce water demand

3) More Resource Intensive – increase water demand



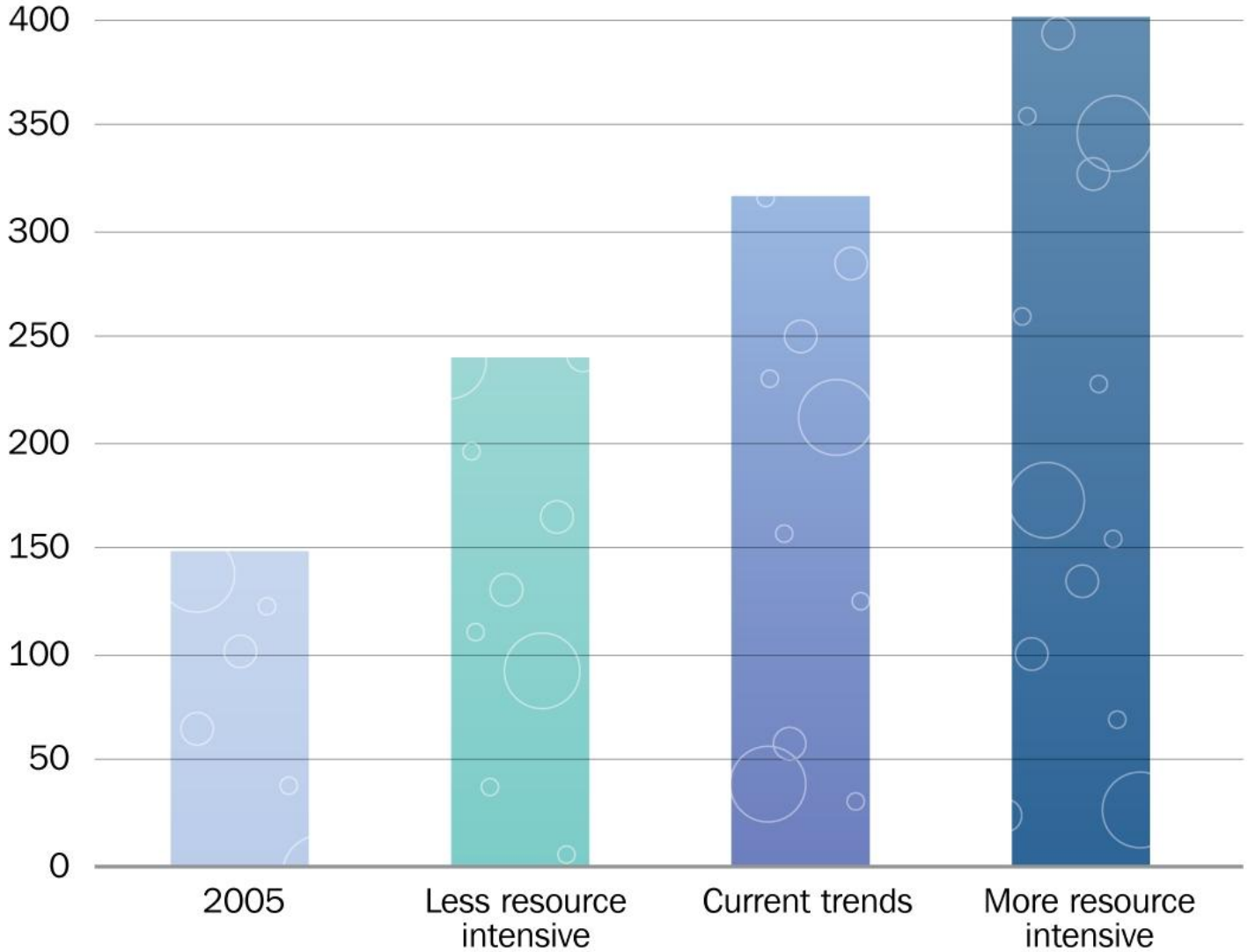
Source: B. Dziegielewski and F.J. Chowdhury, 2008

Public Supply, Total Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day



Source: Dziegielewski and Chowdhury, 2008

Public Supply, Groundwater Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day



Source: Dziegielewski and Chowdhury, 2008

ISWS Groundwater Study

Deep-bedrock aquifer –

"cannot be counted on (indefinitely) to meet all future demand scenarios across the 11-county region."

Shallow-bedrock aquifer –

consequences include:

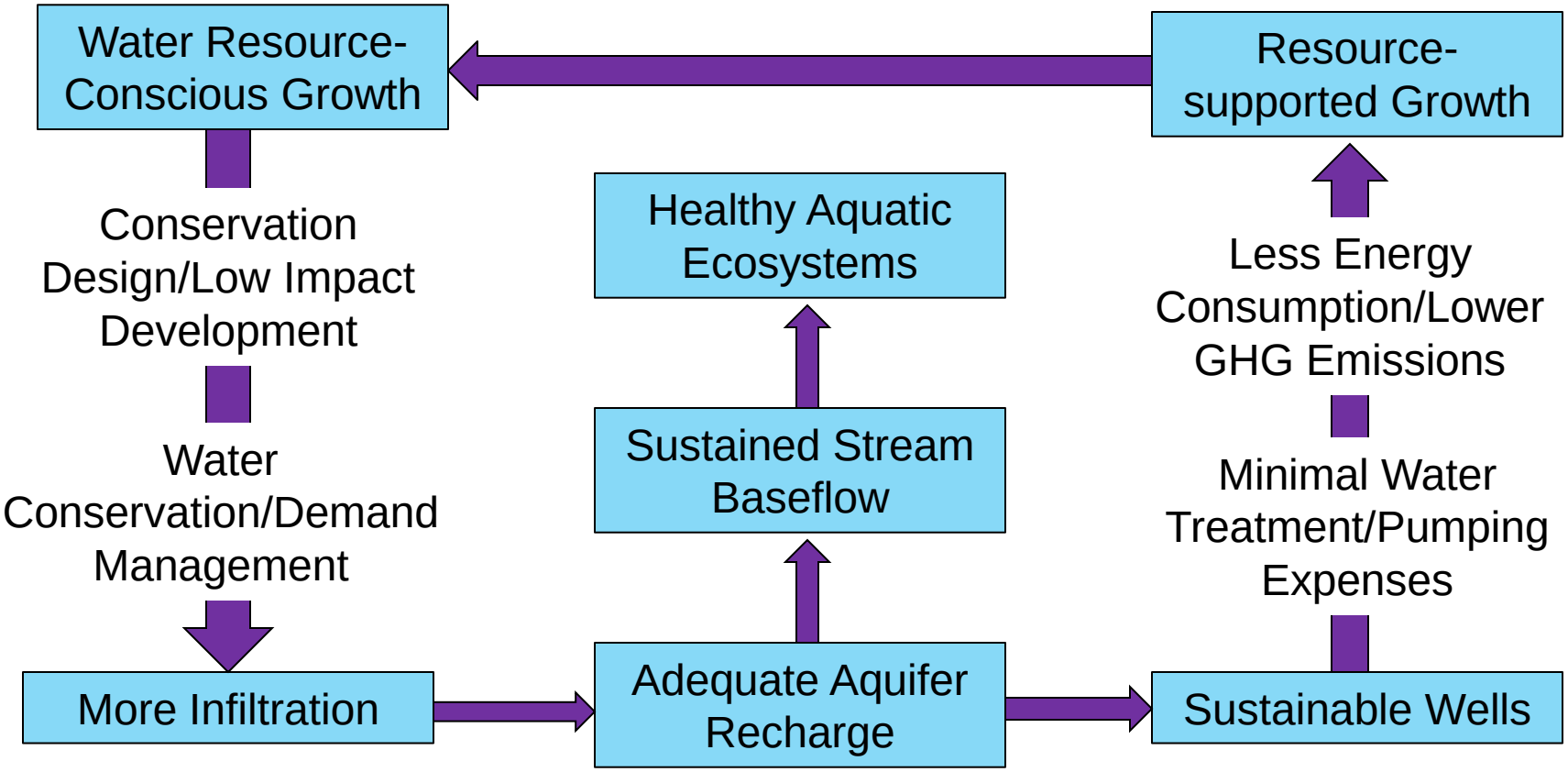
* interference drawdown,
* streamflow capture

Land & Water

Development Patterns vs. Water Supply:

- Recharge
- Infrastructure Costs
- Per Capita Demand

Recharge



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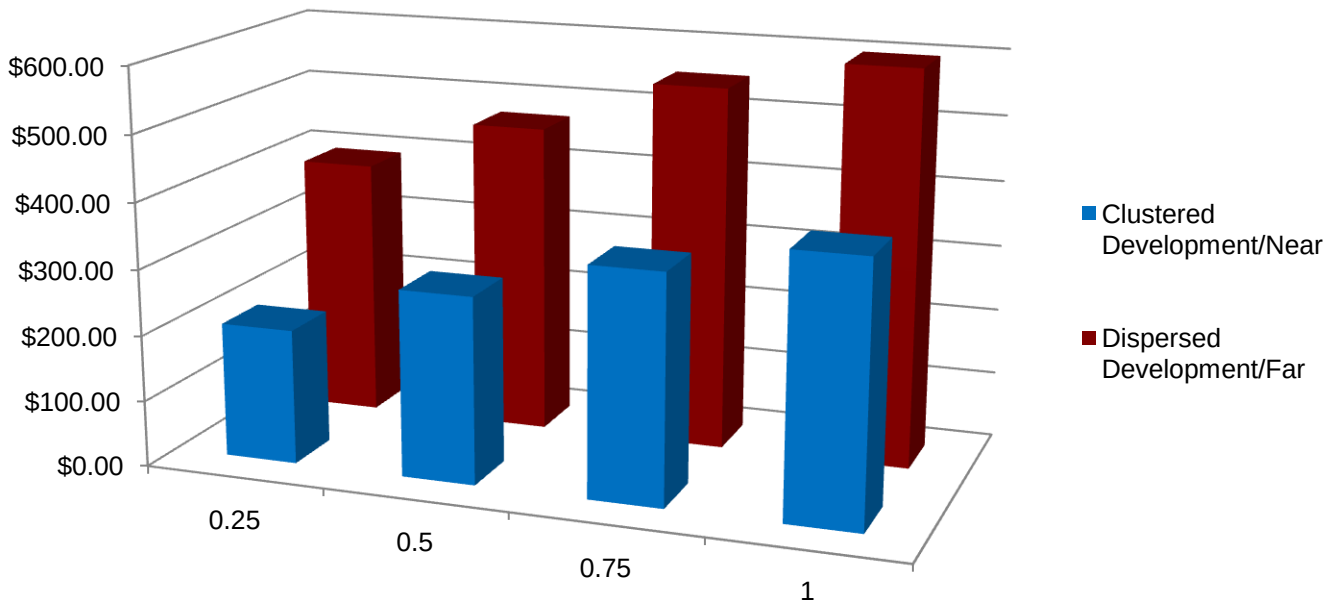
Infrastructure Costs

Annual Infra Costs/HH



Modified from Speir, Cameron and Stephenson. 2002

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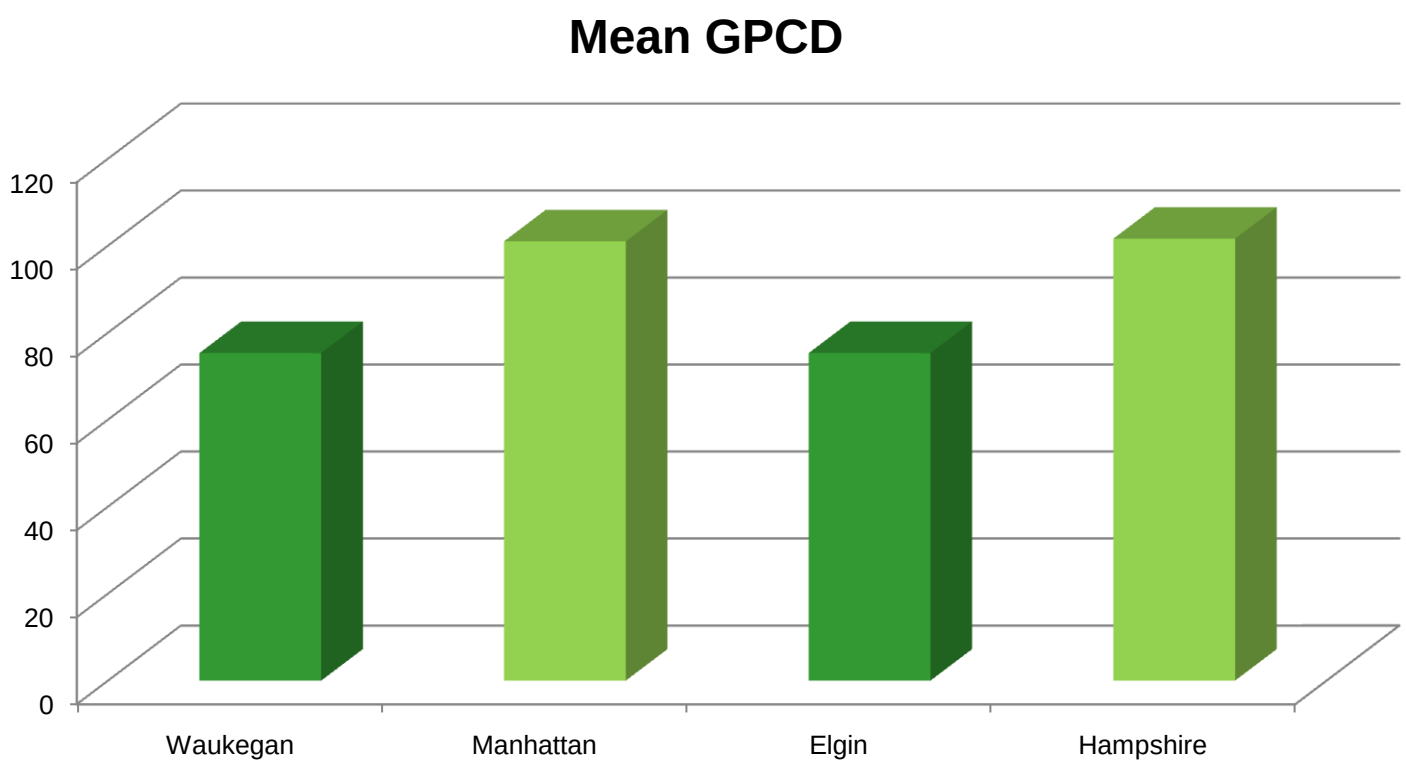
Per Capita Demand



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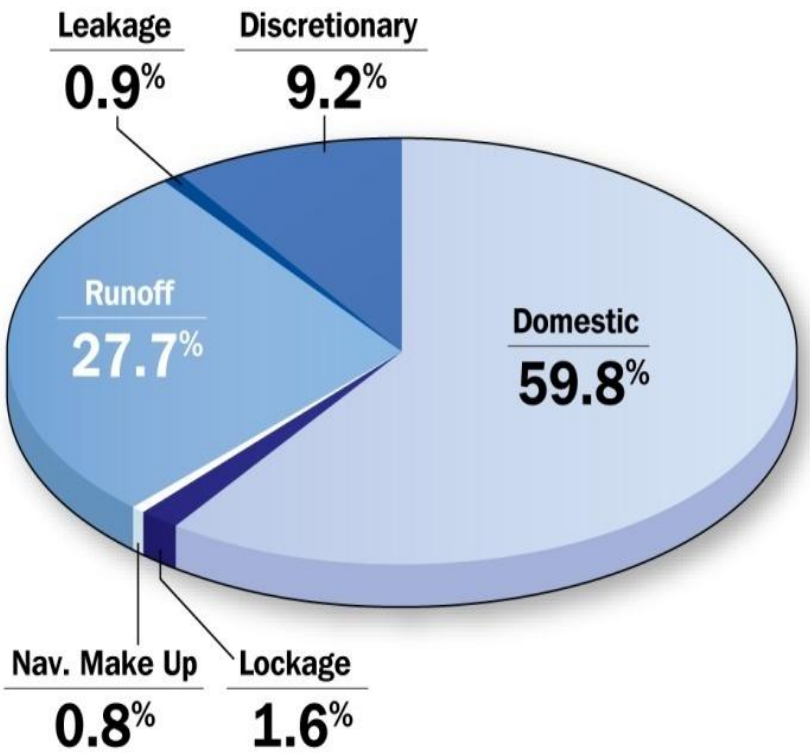
Proposed Tools for Integrating Land Use & Water Supply Planning

- Region-wide
  - Local Planning Technical Assistance Act
    - Conservation Plans w/in Comp Plans
  - Water Revolving Funds
    - Prioritize rehab of systems
  - DRI
    - GW withdrawal thresholds, cumulative w/d impacts
  - *GO TO 2040*
    - Emphasize infill/redevelopment, ecologically-sensitive & recharge areas

Proposed Tools for Integrating Land Use & Water Supply Planning

- Lake MI Region
  - Stormwater Retention
  - New Permittees w/in Service Region
  - Proactive IDNR Conservation Efforts

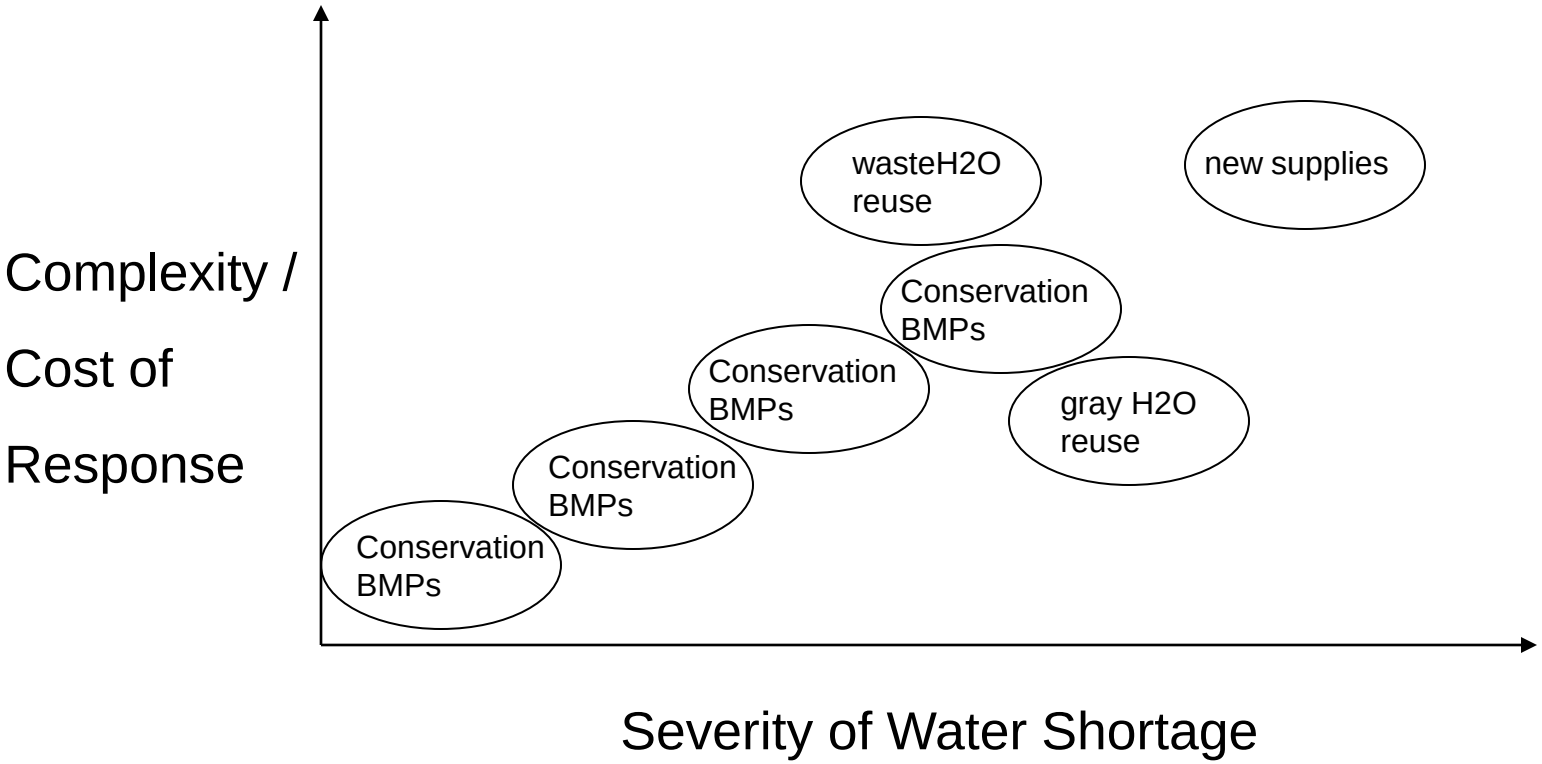


Source: D. Injerd, 2009, "*Lake Michigan Water Availability*"

Proposed Tools for Integrating Land Use & Water Supply Planning

- Groundwater-dependent Communities
  - 1983 Water Use Act
  - Recharge Areas
- Inland River Communities
  - Watershed Planning

Managing Supply to Meet Water Demand



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14 Adopted Water Conservation Measures

* Residential Surveys
* Retrofits
* Leak Detection/Repair
* Metering
* Large Landscapes
* High-Efficiency Washers
* Public Information
* Wholesaler Incentives
* Water Rates
* Waste Prohibition
* High-efficiency Toilets
* School Education
* Conservation Coordinator
* Commercial, Industrial and Institutional

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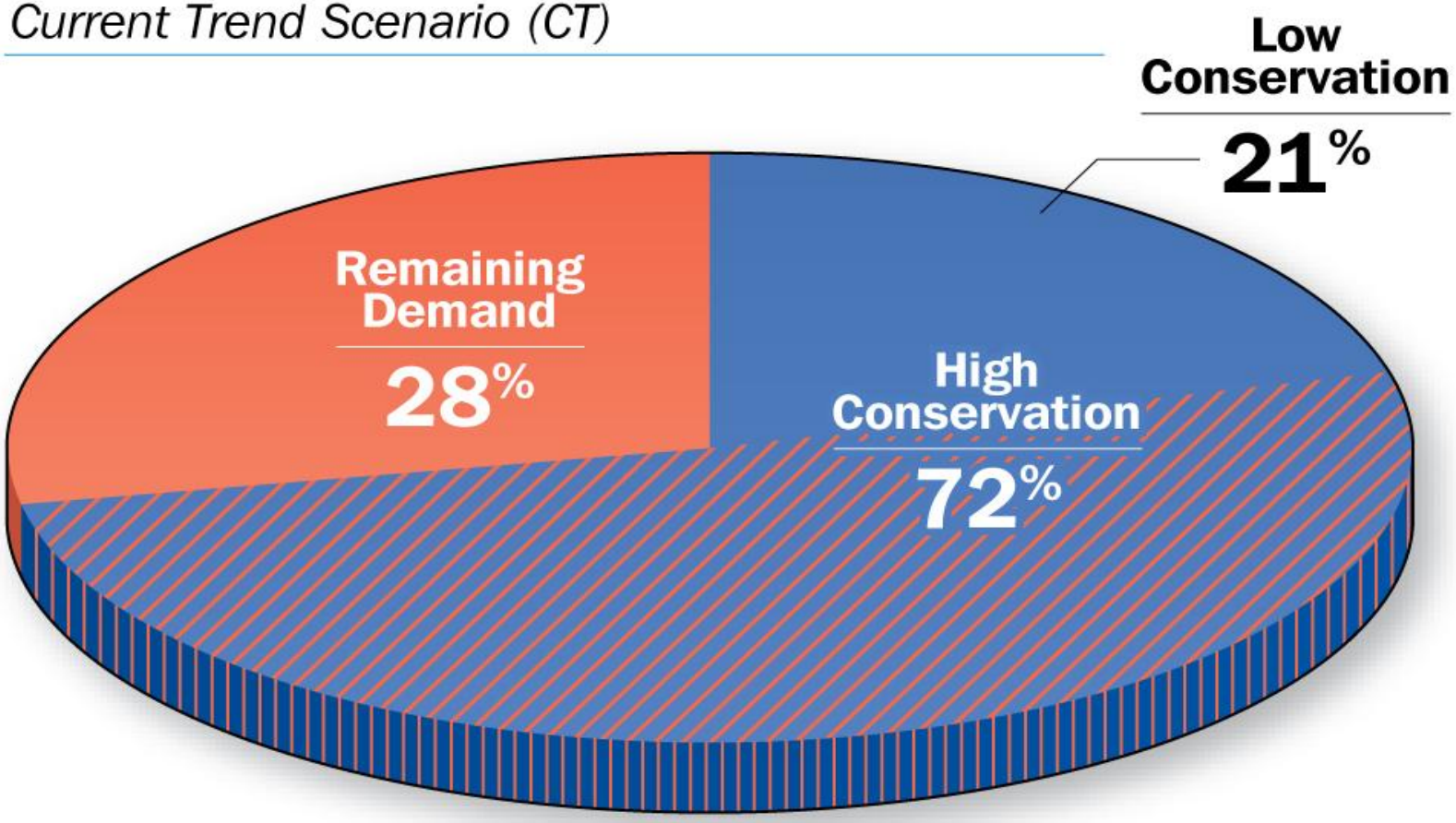
Potential of Conservation to Meet Incremental Demand in Public Supply Sector

Current Trend Scenario (CT)

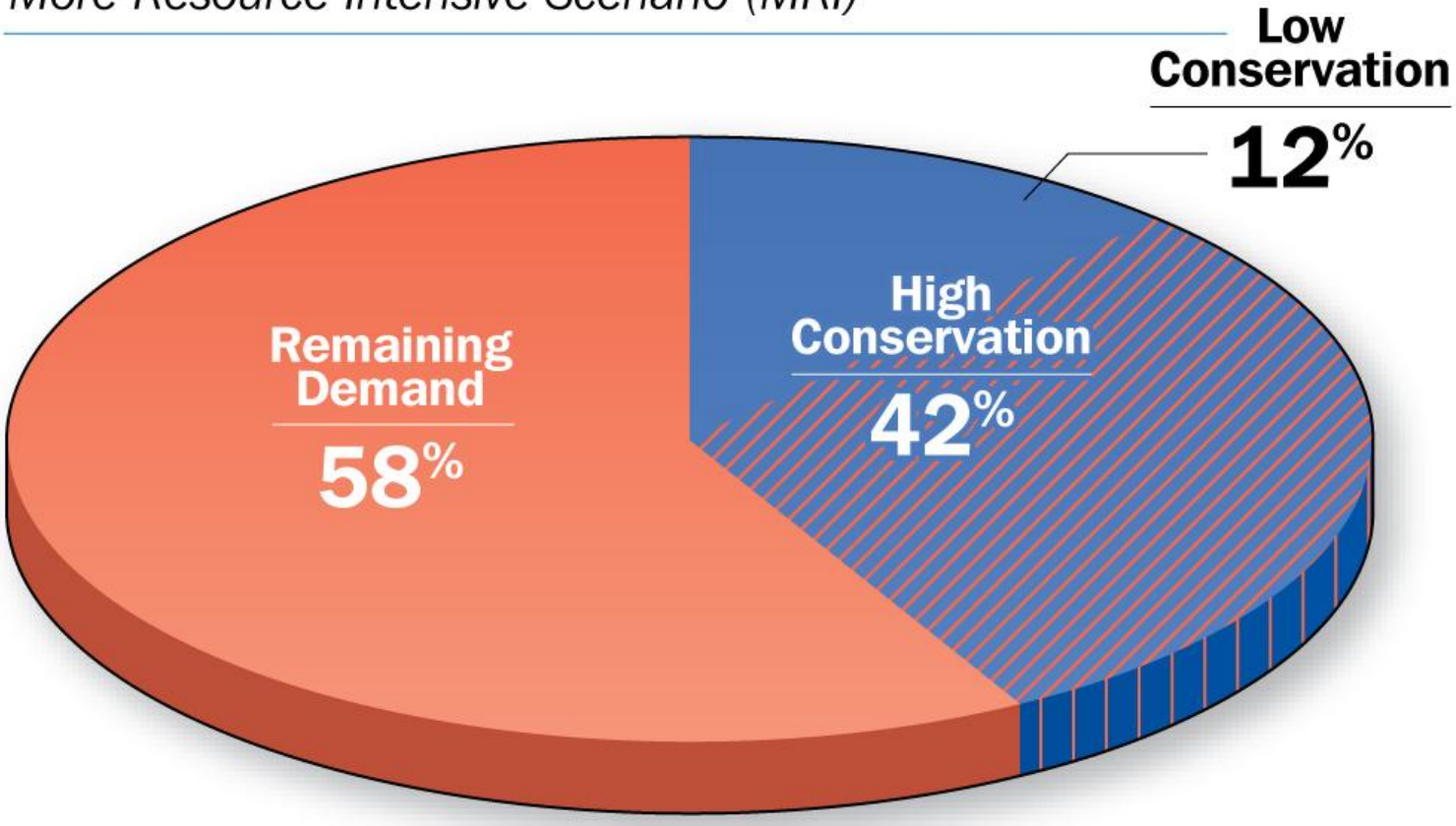


*2005-2050 Current Trends scenario, incremental demand = 381 MGD

Source: Chicago Metropolitan Agency for Planning

Potential of Conservation to Meet Incremental Demand in Public Supply Sector*

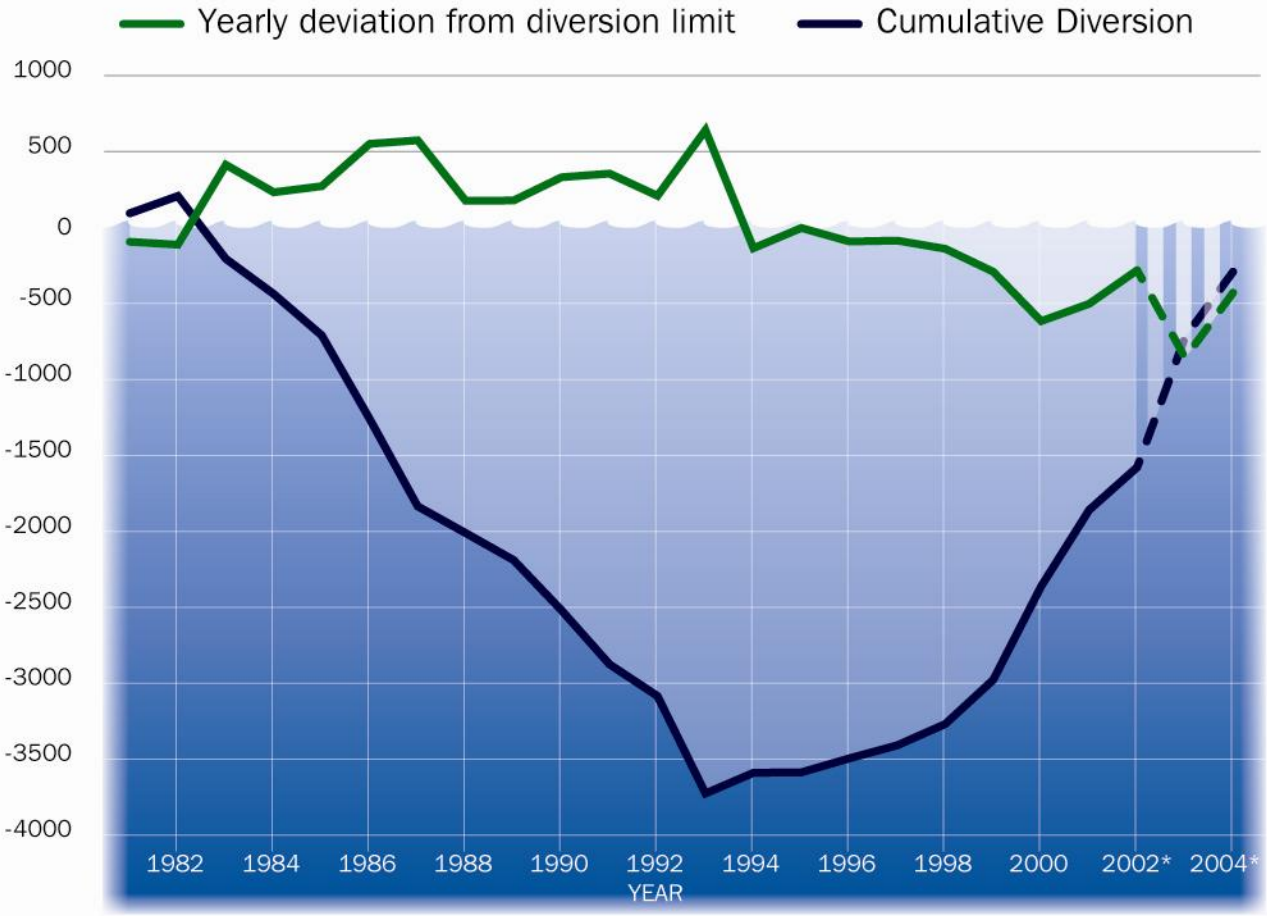
More Resource Intensive Scenario (MRI)



*2005-2050 More Resource Intense scenario, incremental demand = 648 MGD
Source: Chicago Metropolitan Agency for Planning

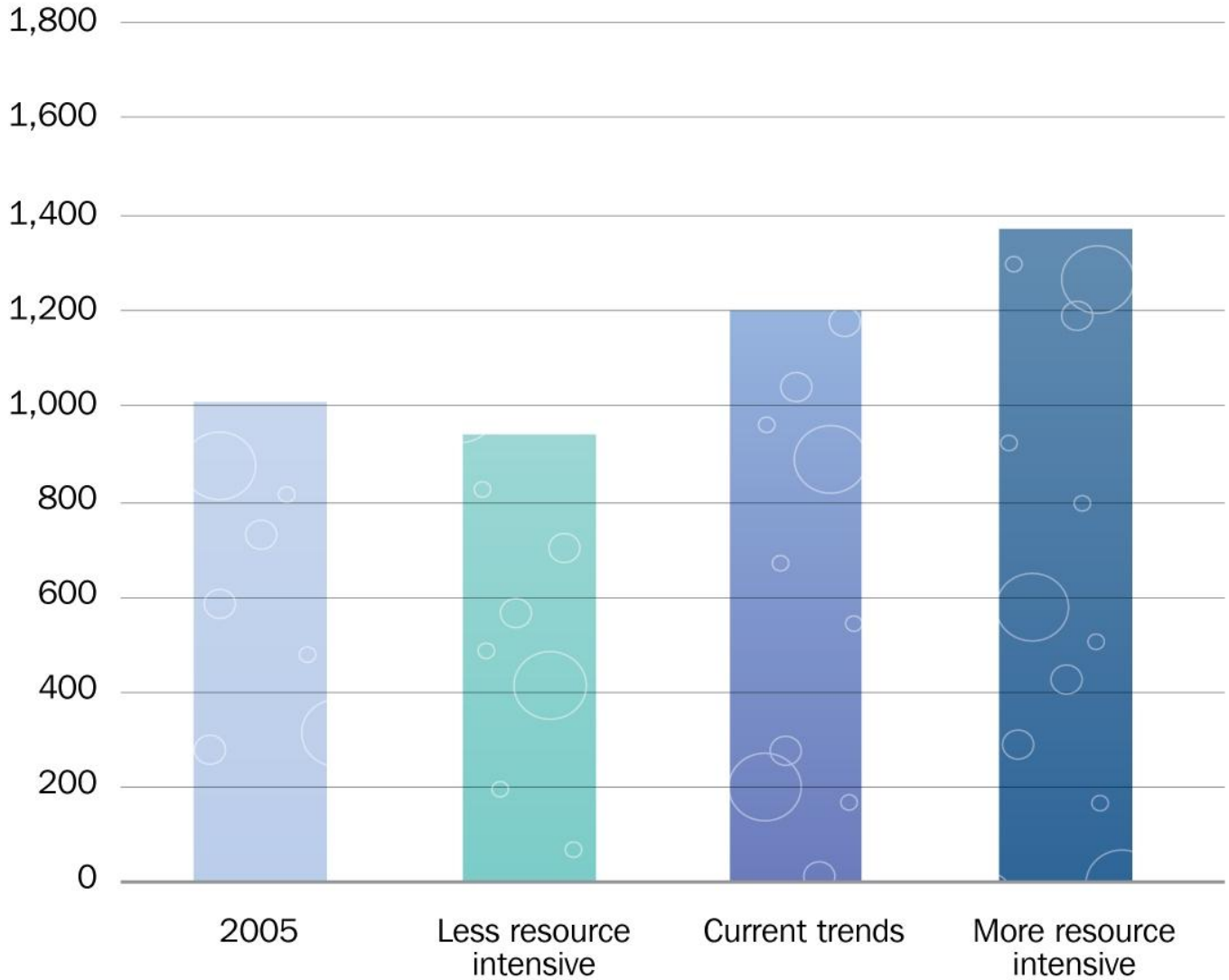
Status of Illinois' Lake Michigan Diversion

in cubic feet per second



*Note: Years 2002 through 2004 are estimates
Source: Illinois Department of Natural Resources (Office of Water Resources), January 2006

Public Supply, Lake Michigan Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day



Source: Dziegielewski and Chowdhury, 2008

Illinois Diversion in 2050 - MRI

Diversion Component	Lake MI Water (MGD)
Domestic Pumpage	1,397
Stormwater Runoff	546
Discretionary	66
Lockage	58
Leakage	24
Navigation Makeup	23
TOTAL DIVERSION	2,114

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Policy-oriented Challenges

* Mismatch between institutional structure of management and regional nature of the resource

* Bifurcated state-legal scheme

* Water rates do not reflect the true cost of resource delivery

To do in 2009

- 3 Remaining meetings,
  - Sept. 22nd, Oct. 27th, Nov. 24th
- NE IL Regional Water Supply Plan
  - to be published December 2009
- Regional water supply planning *and* action requires …
  - Funding,
  - Political will,
  - And more …

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Thank you!

http://www.cmap.illinois.gov/watersupply/default.aspx