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Managing Water Demand in Light of Supplies: A Northeastern Illinois Perspective

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Acknowledgments

- Executive Order 2006-1
- Illinois Department of Natural Resources, Office of Water
- Illinois State Water Survey / Illinois State Geological Survey
- Southern Illinois University Carbondale, *Dept. of Geography and Environmental Resources*
- NE IL Regional Water Supply Planning Group (RWSPG)
- Local Donors (3rd year)
- CMAP Staff: *Amy Talbot, Hala Ahmed, Margaret Schneemann, Megan Elberts, Sandy Perpignani, Jesse Elam, and others*



CMAP

- * Regional Planning Agency
for 7 counties of NE IL

(Public Act 095-0677)



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CMAP = Areawide Water Quality Planning Agency

- Areawide Water Quality Management Plan
 - *Designed to be comprehensive*
 - *Purpose: eliminate water pollution!*
 - *Approach: watershed planning*





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Water 2050

Northeastern Illinois Regional Water Supply/Demand Plan

THE WATER
PLANN

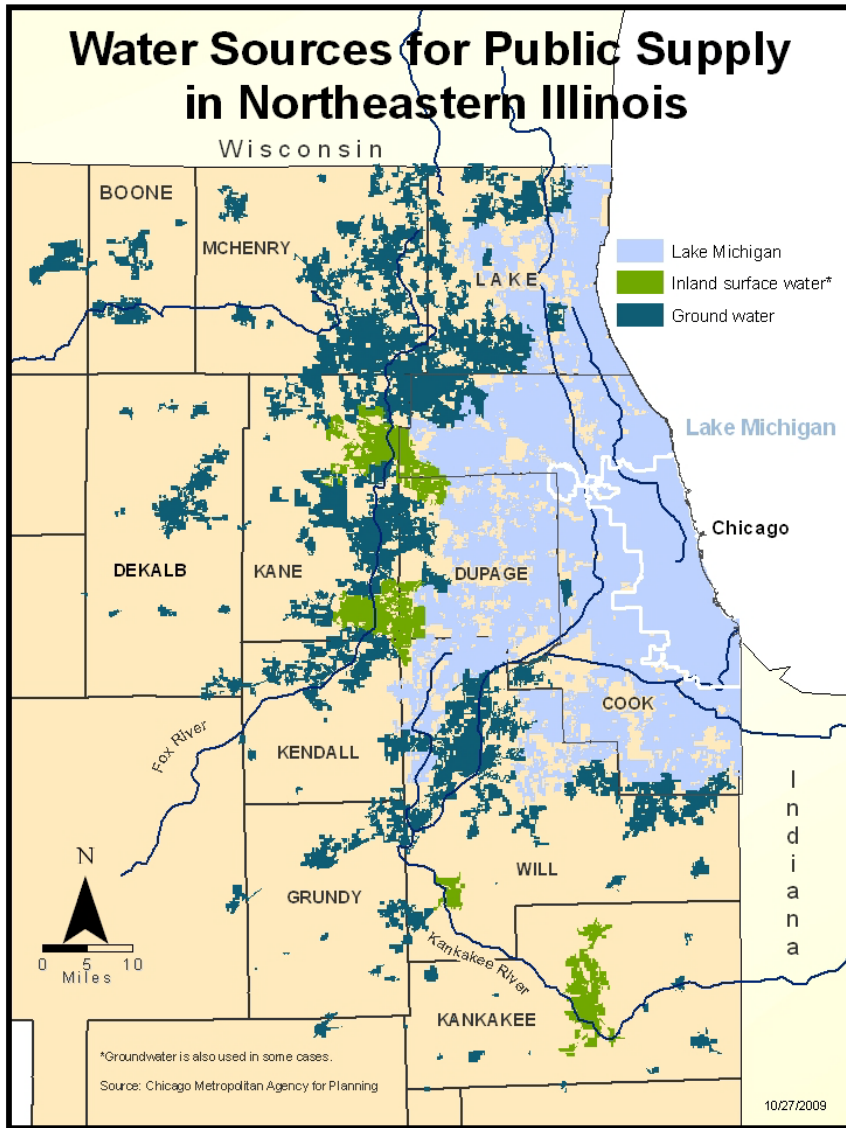
northeastern illin

ING COMMISSION

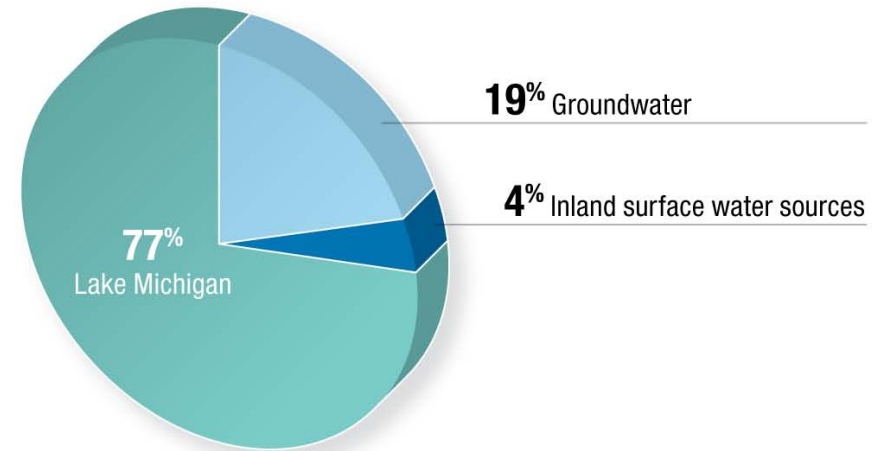
1966

1974

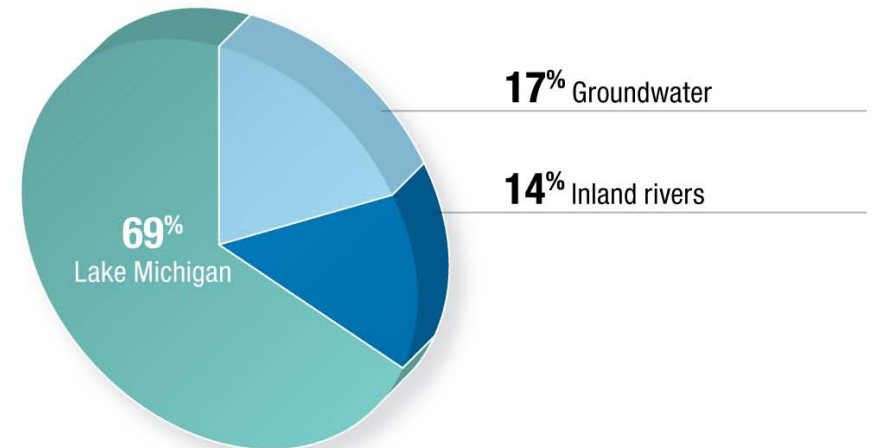
March 2010



Sources of water for northeastern Illinois, by population served, 2000

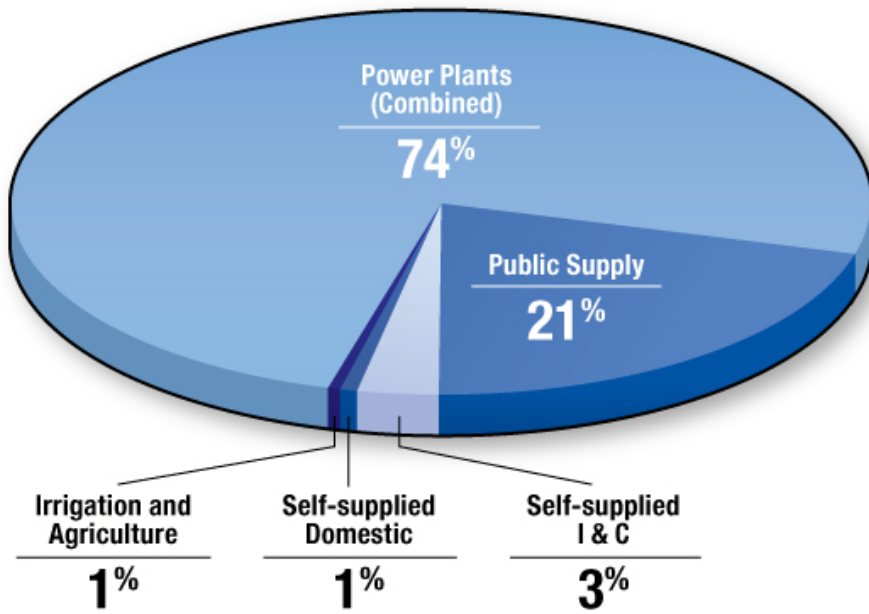


by relative withdrawals, 2005

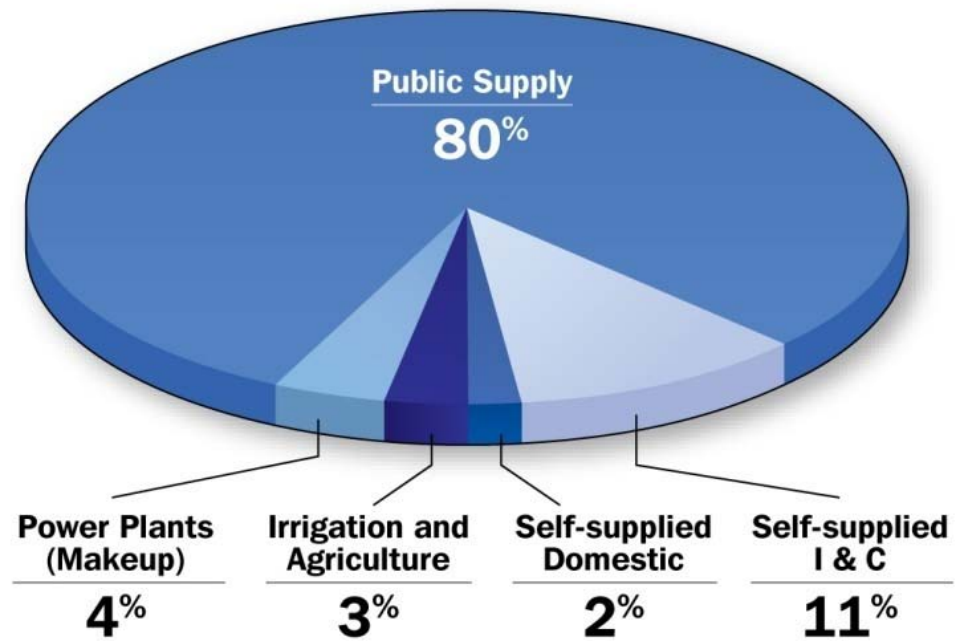


Source: Chicago Metropolitan Agency for Planning ; Dziegielewski and Chowdhury, 2008

2005 Water Use by Sector



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



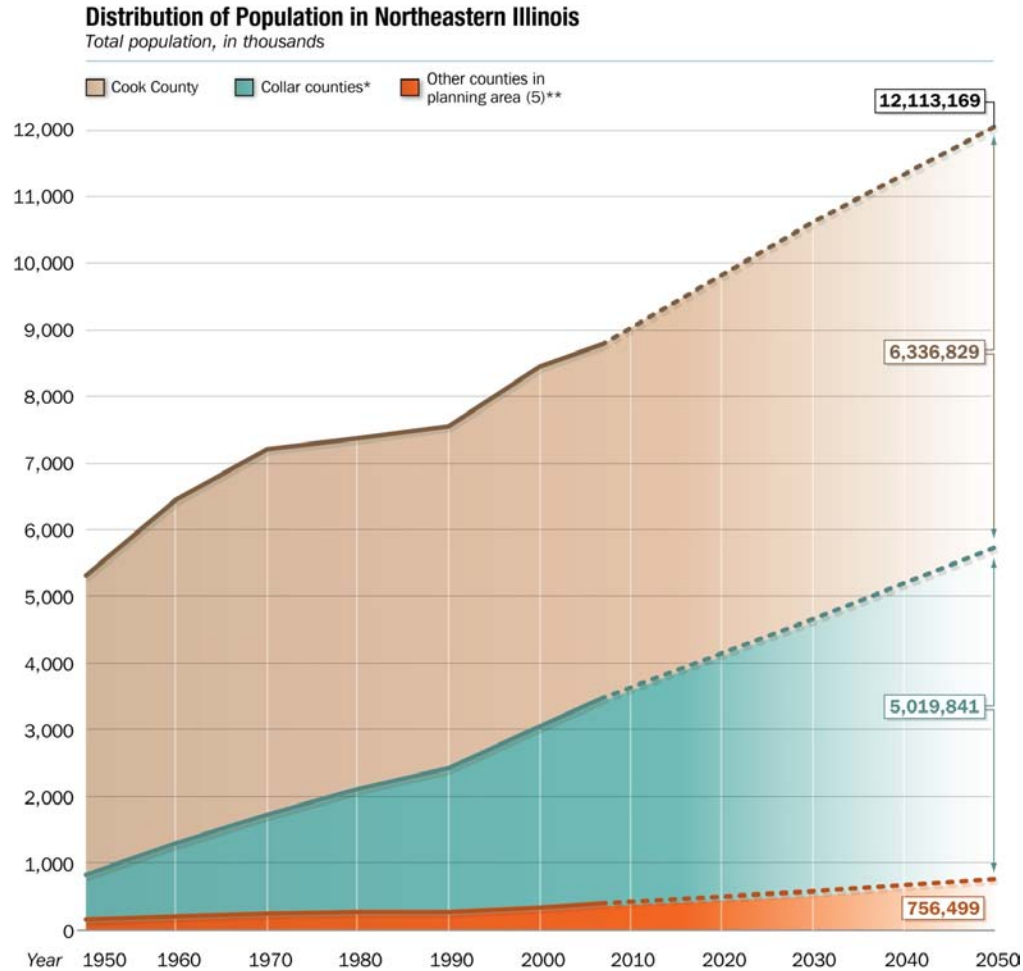
Source: B. Dziegielewski and F.J. Chowdhury, 2008



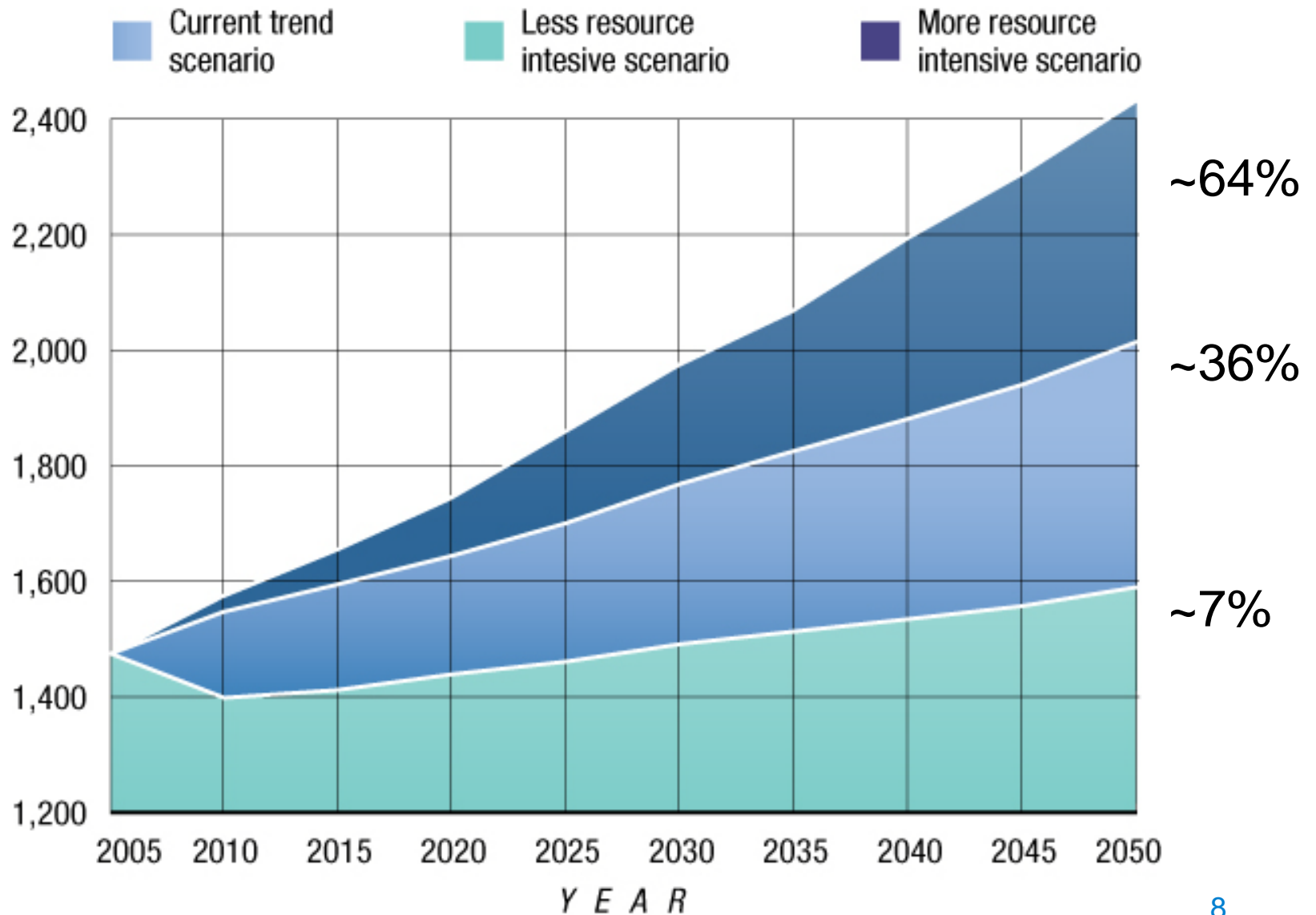
11-County Population

- 2005 – 8.74 million
- 2050 – 12.11 million

~ 38%
growth



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



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

Water Pricing and Northeastern Illinois Water Supply Planning

NE IL Water Demand Scenarios: 2005 –

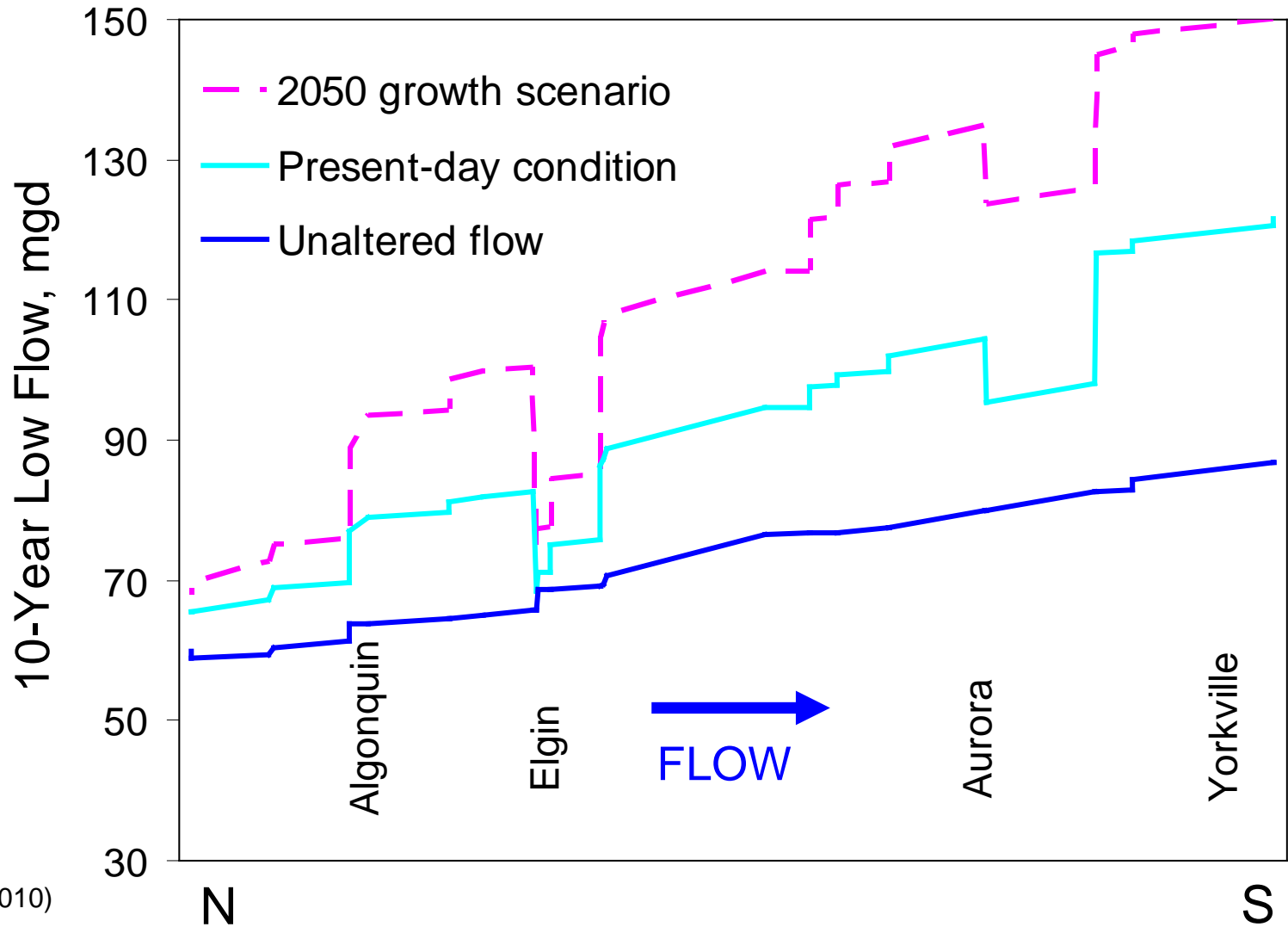
Scenario	Demand Increase	Real Annual % Increase in Water Prices	% Annual Conservation Rate	% Annual Increase in Household Income
Most Resource Intensive (MRI)	64.1%	0%	0%	1.0%
Current Trends (CT)	35.8%	0.9%	0.74 %	0.7%
Less Resource Intensive (LRI)	7.2%	2.5%	1.11%	0.5%

Impacts on Water Sources

- 1) Fox River (Kankakee River *unstudied*)
- 2) Groundwater
 - Deep-Bedrock Aquifer(s)
 - Shallow-Bedrock Aquifer(s)
- 3) Lake Michigan

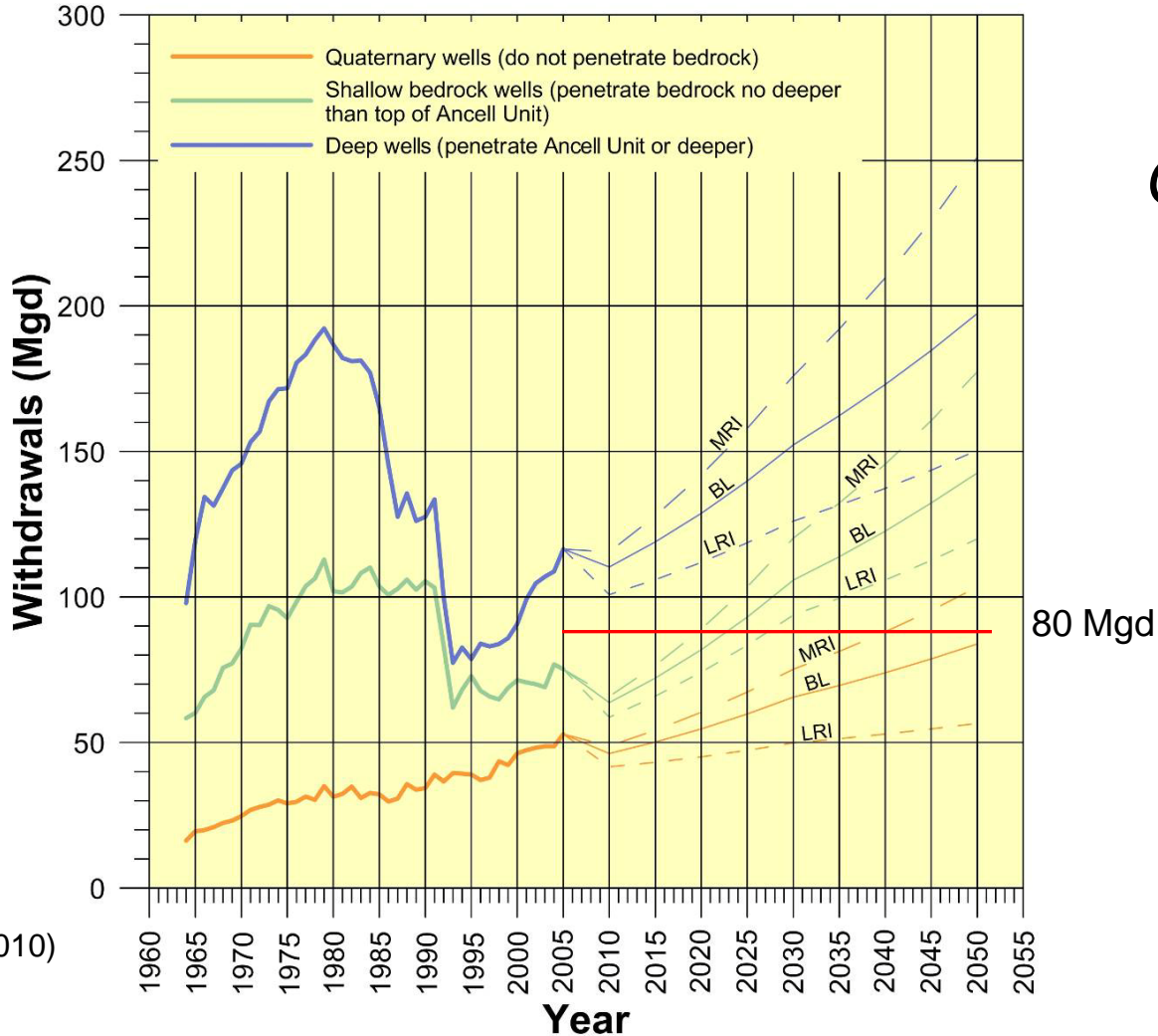
Fox River Surface Water Accounting Tool

2050 Baseline Scenario with only Elgin and Aurora withdrawals



(ISWS, 2010)

NE IL Simulated Groundwater Withdrawals: 1964-2050



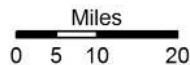
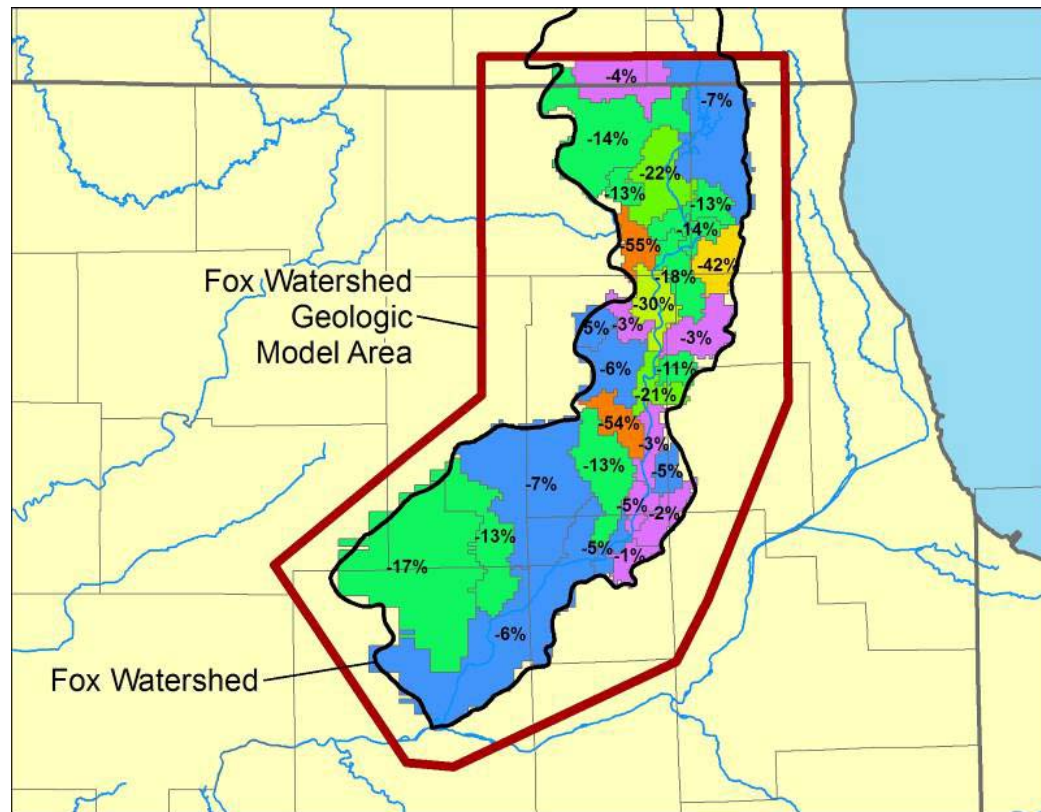
*Estimated
Growth in Scenario
Demand*

(Dziegielewski and Chowdhury, 2008)

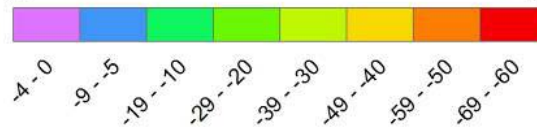
LRI = 44%
BL = 84%
MRI = 135%

(ISWS, 2010)

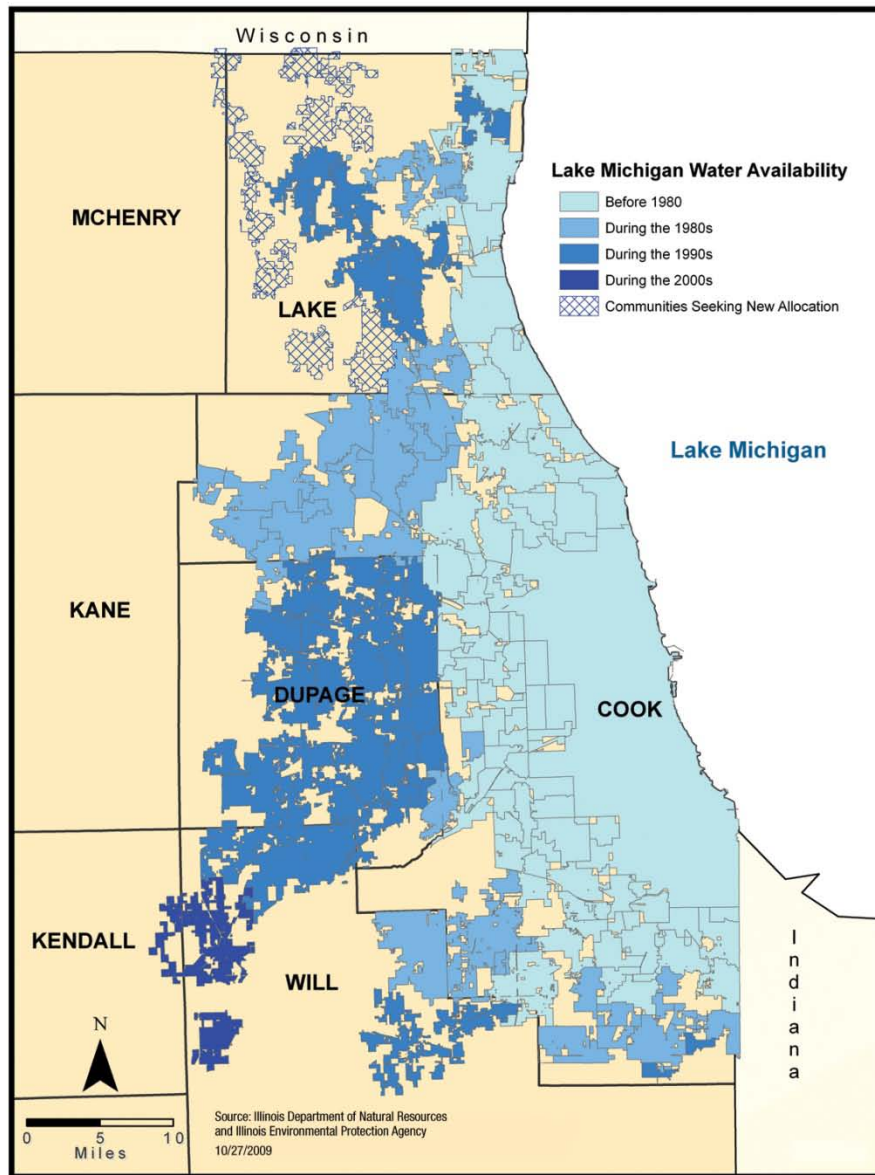
2050: Streamflow Capture



Change in Natural Groundwater Discharge (%)



(ISWS, 2010)



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
<i>TOTAL DIVERSION</i>	2,114

2010 - 2050

What to do?



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Water 2050

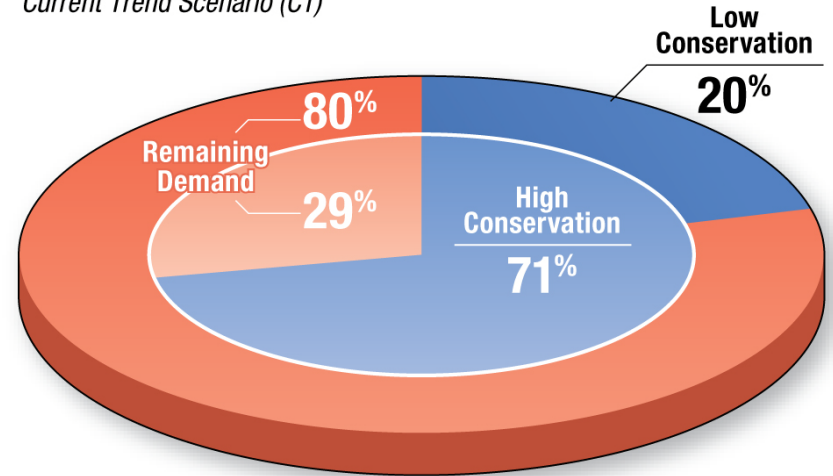
Demand Management

- * water-use conservation
- * full-cost of service pricing

Integrating Land Use with Water Supply Planning

Potential of Conservation to Meet Incremental Demand in Public Supply Sector

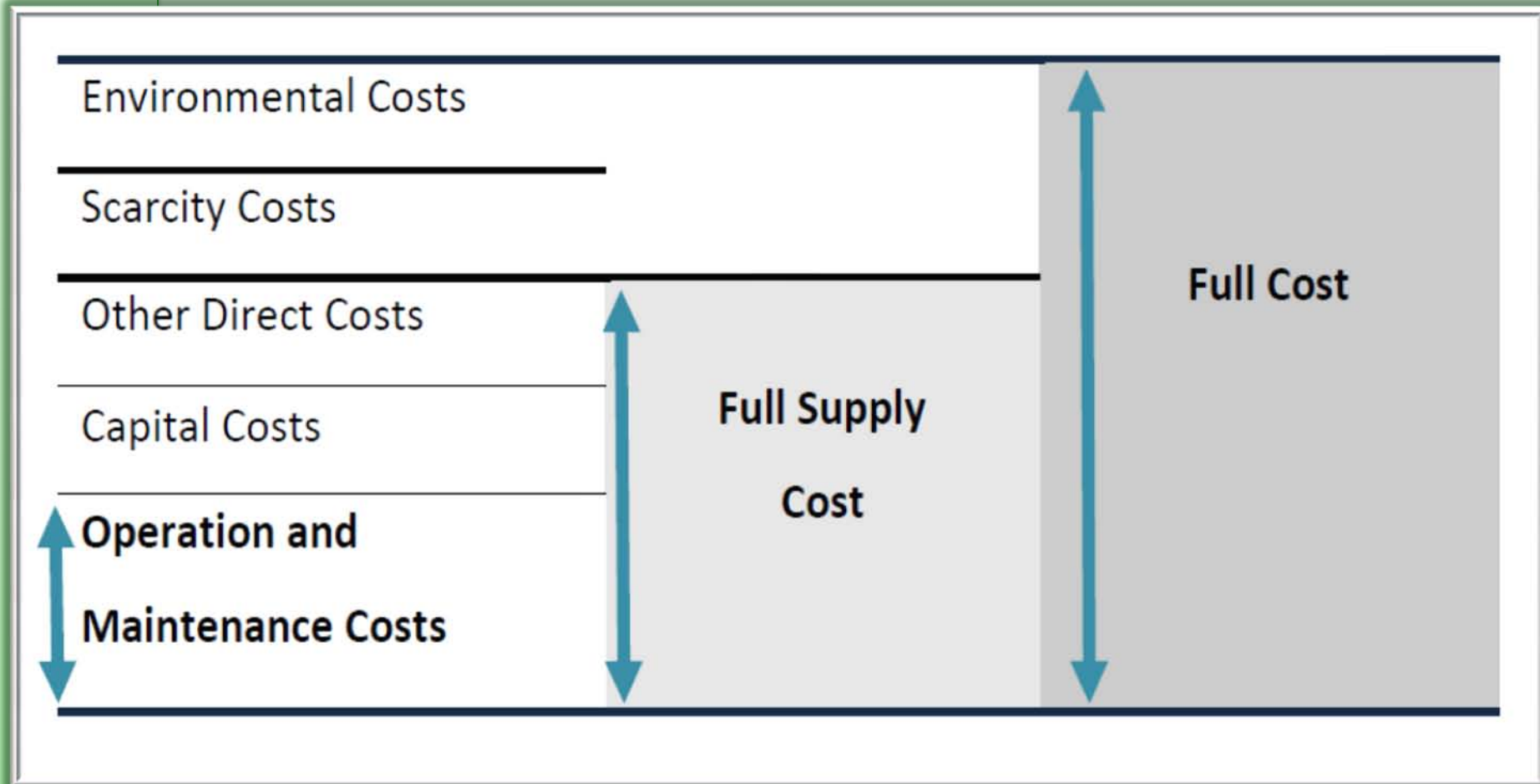
Current Trend Scenario (CT)



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

Source: Chicago Metropolitan Agency for Planning

Full Cost Pricing: The Implementation Challenge



Final Thoughts

- * Institutional Structure –
fragmented!
- * Collaborative Management –
a new experiment in NE IL
- * Policy Environment –
Executive Order vs. Legislation
- * Left Unanswered:
how to *operationalize sustainability* (?)

Thank you!

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