Water Demand Study to 2050 for 15-County East Central Illinois Region
Outline

- Study background
- Study areas
- Water demand sectors
- Method
- Water demand scenarios
- Historical data
Study Background

- Executive Order 2006-1
- 2 areas for priority planning
- Assessing demands and supplies through 2050
- Focus on regional cooperation and coordination

Source: Illinois State Water Survey
East Central Regional Water Supply Planning Committee

Mahomet Aquifer Consortium

Office of Water Resources

Illinois State Water Survey (1895)

Illinois Department of Natural Resources

WHPA and Dr. Ben Dziegielewski
Water Supply Study Begins June, 2006

Water Demand Study Begins June, 2007

Water Demand Study Ends May, 2008

Water Supply Study Ends January, 2009

Outreach Meetings August-September, 2007

Begin Incorporating Demand Study Results into Supply Study June, 2008

RWSPC Planning and Management Recommendations due to IDNR June, 2009

Begin Incorporating Demand Study Results into Supply Study June, 2008
Water Demand Sectors

1. Public water supply

2. Self-supplied Commercial & Industrial

3. Self-supplied domestic

4. Irrigation & agriculture

5. Power generation
Method

Historical Water Demand

Historical Variables
- population
- employment
- temperature

Future Water Demand

Future Variables
- population
- employment
- income
Public Water Supply

- Approach - Multiple regression
- Historical Data - ISWS
- Driver - Population
- Explanatory Variables
  - Employment
  - Income
  - Single family housing
  - Price of water
  - Temperature & Precipitation
Self-supplied Commercial and Industrial

- Approach – Multiple regression
- Historical Data - ISWS
- Driver - Employment
- Variables
  - Temperature
  - Cooling degree days
  - Fraction of employment in high-demand sectors
Irrigation and Agriculture

- Approach – Demand per irrigated acre / demand per livestock unit
- Driver - Irrigated acres/number of livestock
- Variables
  - Biofuel capacity
  - Temperature
  - Precipitation
  - Drought index
Thermoelectric Power Generation

- Approach – Demand per unit of power generation
- Historical Data - ISWS
- Driver - Unit of power generation
- Variables
  - Type of generation
  - Type of cooling system
  - Temperature
Self-supplied Domestic

- Approach – Per capita unit-demand
- Historical Data – USGS
- Driver – Unserved population
- Variables
  - Median income
Water Demand Scenarios

1) Current trends / Baseline
   - recent trends continue
   - includes known proposed increases

2) Less resource intensive
   - smart growth occurs
   - demand variables shift to less water demand
   - more water conservation
   - industrial water demand decreases

3) More resource intensive
   - add ethanol plants
   - demand variables shift to more water demand
   - less water conservation
Water Demand Scenarios

Annual Water Use (MGD)

- Historical Water Use
- Scenario 1 - Baseline
- Scenario 2 - Less
- Scenario 3 - More

Years:
- 1985
- 1990
- 1995
- 2000
- 2005
- 2010
- 2015
- 2020
- 2025

Water Demand Scenarios

- Baseline
- Less
- More
Water Demand Scenarios

- Future water demand
  - geographical area
  - water demand sector
  - water sources

- Seasonality – PWS peak day and peak season

- Sensitivity analysis – climate change
Discussion and Questions

Regional Water Supply Planning Committee
www.rwspc.org

Illinois State Water Survey
http://www.sws.uiuc.edu/wsp/

Mahomet Aquifer Consortium
www.mahometaquiferconsortium.org