IndianaWaterSummit.org

Strategic Water Management in Indiana

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August, 2018

Topics

- Infrastructure and Funding
- Recent Policy
- Planning

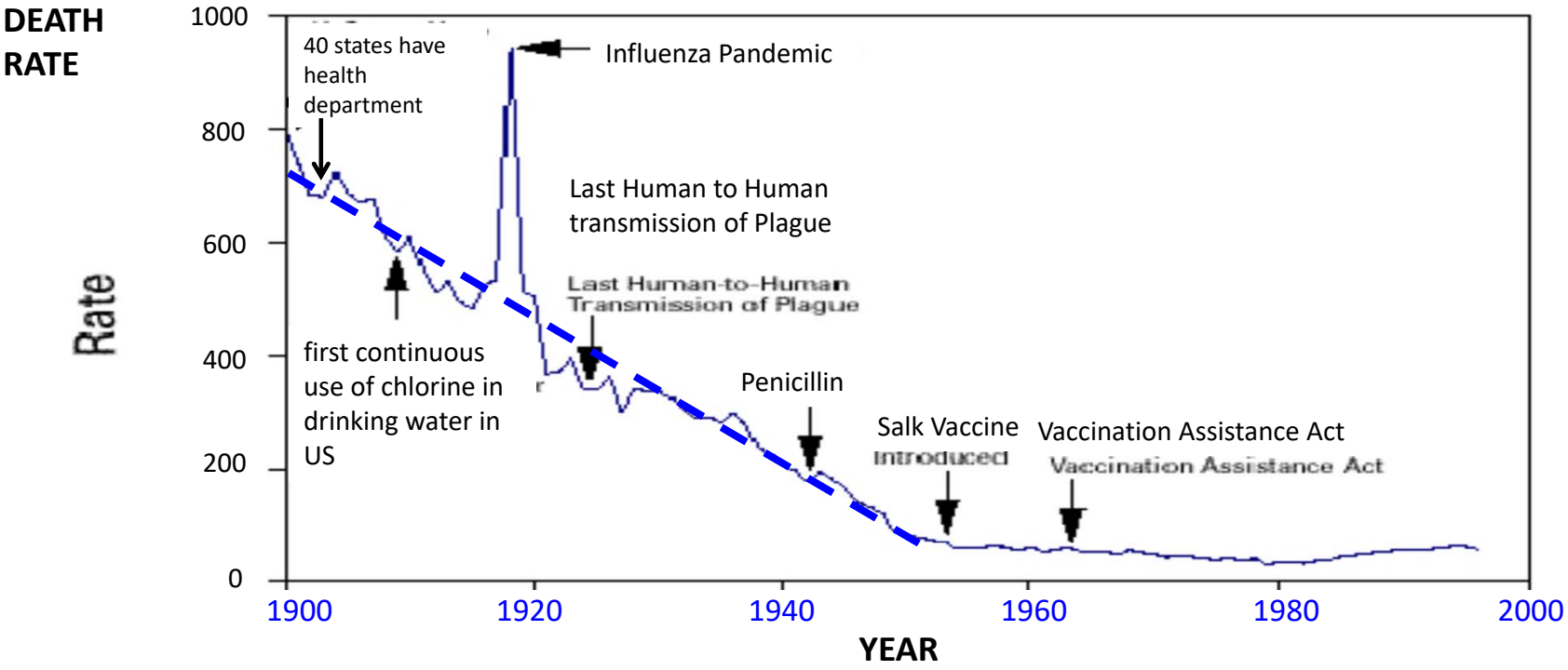
WHY SHOULD WE CARE ABOUT WATER INFRASTRUCTURE?

WATER UTILITIES:
THE MOST EFFECTIVE PUBLIC HEALTH INVESTMENT EVER

History of Water and Public Health

- Pre 1770 – outhouse and wells
- 1770 – invention of water closets
- 1860 – connection to city sewers
- 1880 – widespread river contamination
- 1910 – development of sand filters
- 1920 – use of chlorine as disinfectant
- **1921 – outlaw privies in Indianapolis**
- 1930 – new treatment plants constructed
- 1940 – public health institutions

Death Rates Fall with Treatment



Crude Death Rate for infections diseases – United States 1900-1996

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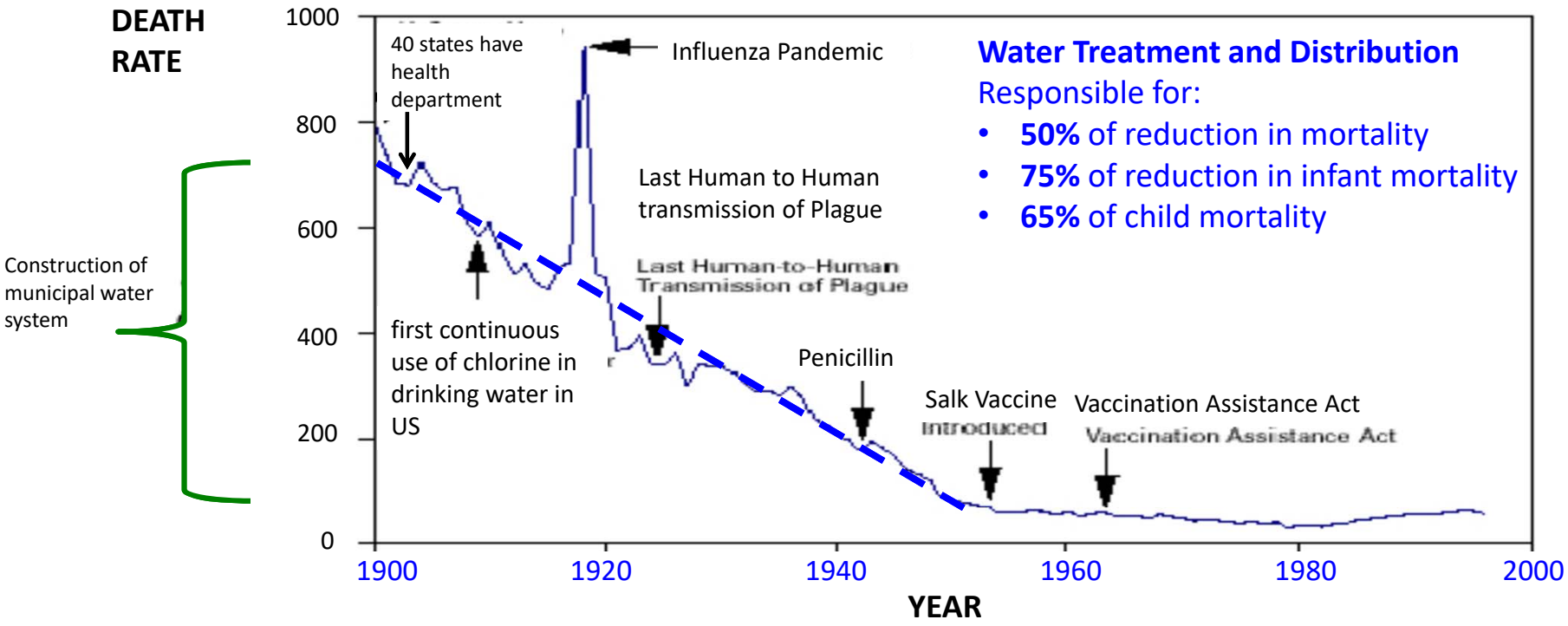


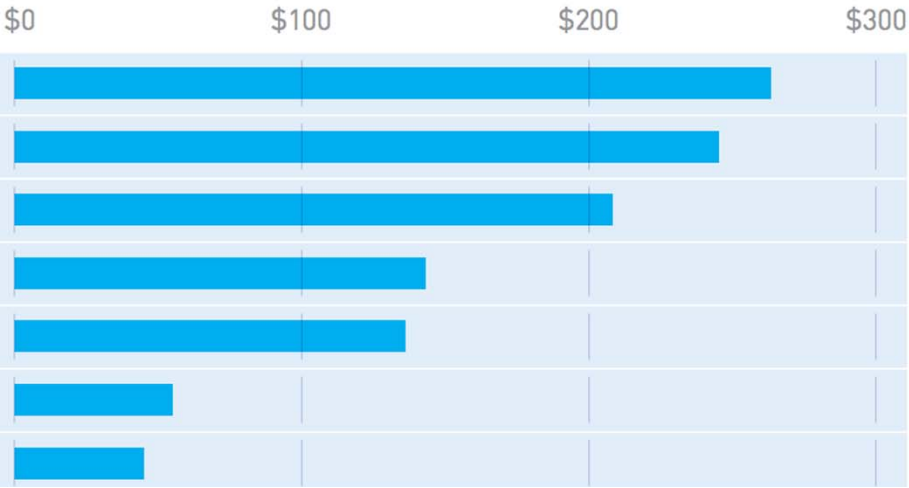
Crude Death Rate for infections diseases – United States 1900-1996

Infrastructure – National / State Picture

- Federal Funds
  - Omnibus Bill -> WIFIA
- State Role
  - WIFIA -> Indiana Finance Authority -> utilities
- Estimated Funding Need
  - $2.3 B now + $800 M/year for 20years
- Current Status
  - limited resource knowledge but new statute (Water Task Force)

Annual Federal Investment

Recipient	Per Capita Federal Investment
IT Infrastructure (Federal Departments)	$251
Research & Development—Defense	$245
Research & Development—Civilan	$208
Higher Education Grants	$143
Highways	$136
Other Transportation Infrastructure	$55
Energy Infrastructure	$46



Values expressed in 2014 dollars. Source: CBO 2015, CBO 2013, GAO 2016.

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Water Infrastructure	$11

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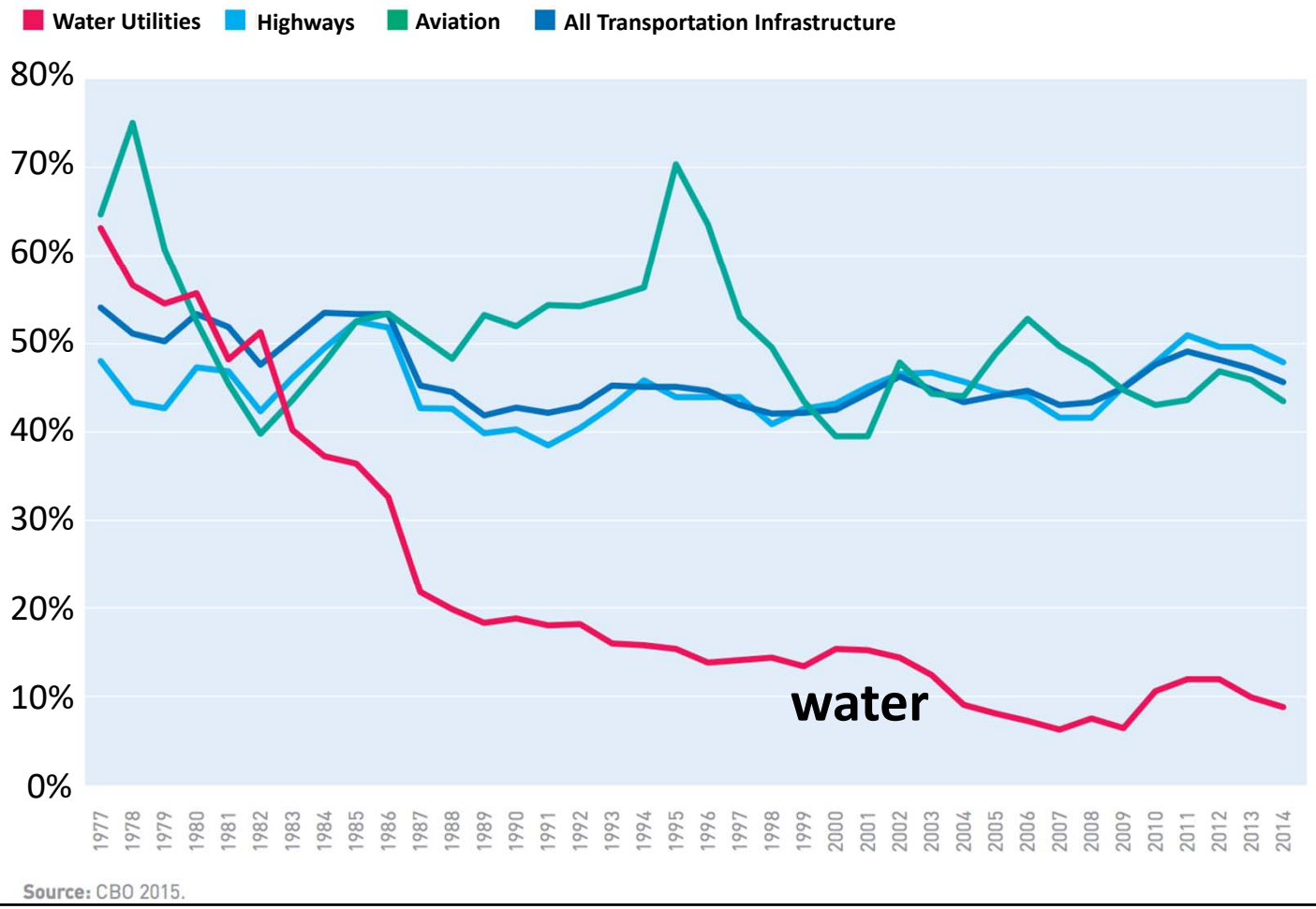
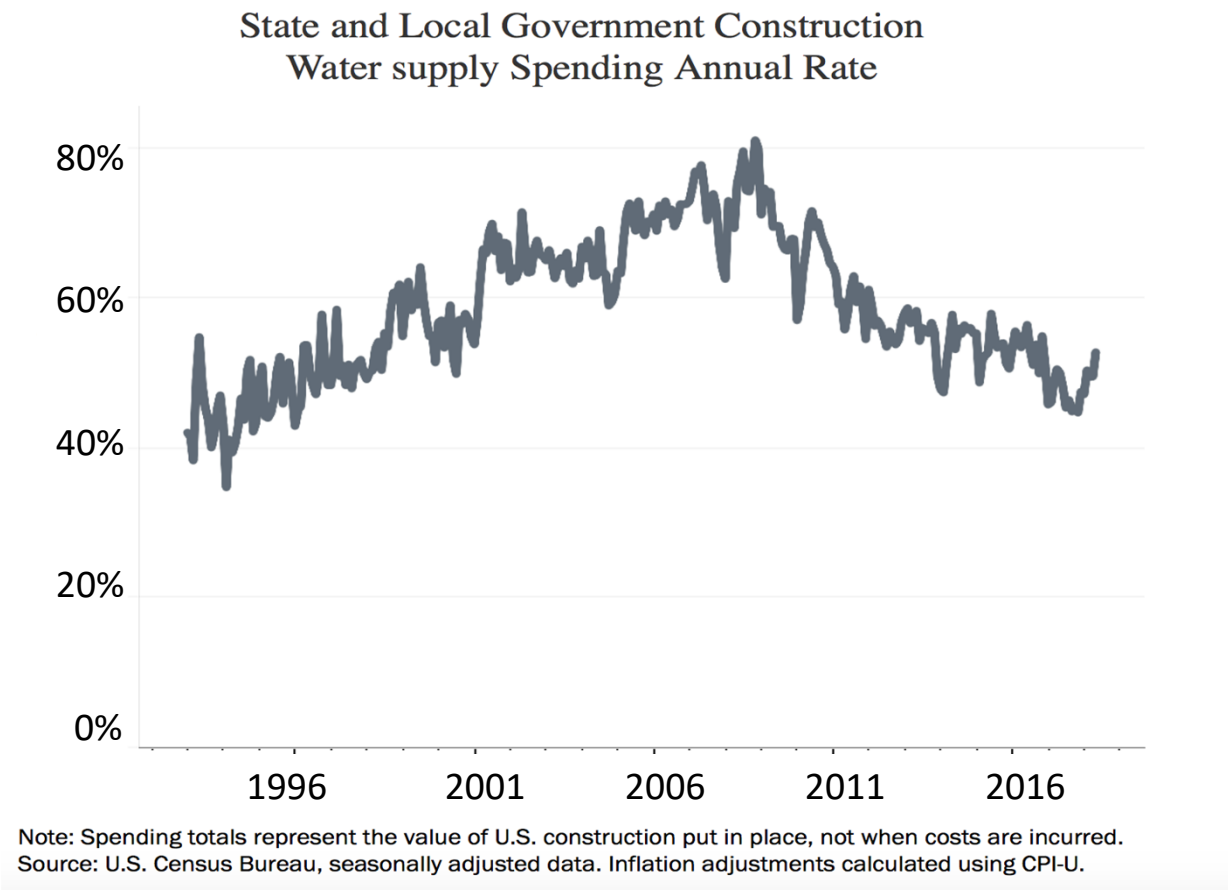
Federal Contribution (1977 - 2014)



Source: CBO 2015.

State and Local Construction Spending



CRITICAL TO THE FUTURE

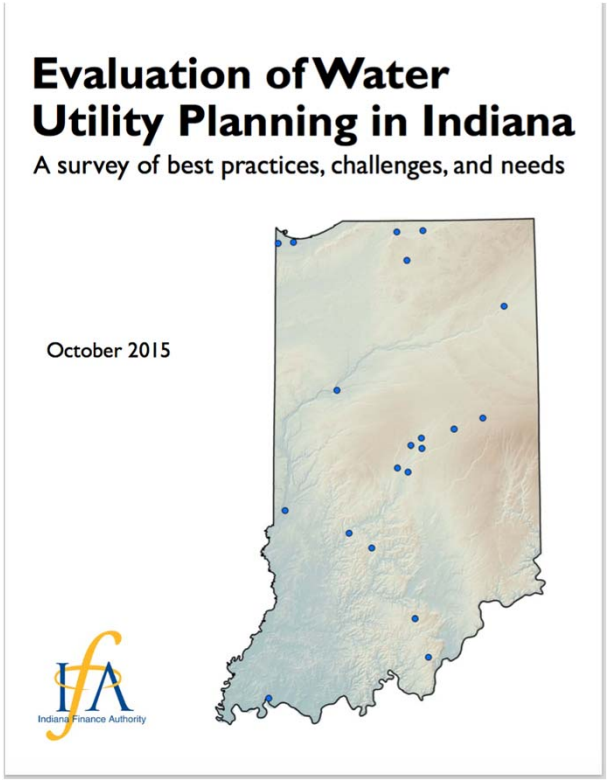
- FEW FEDERAL DOLLARS

- LESS STATE SUPPORT

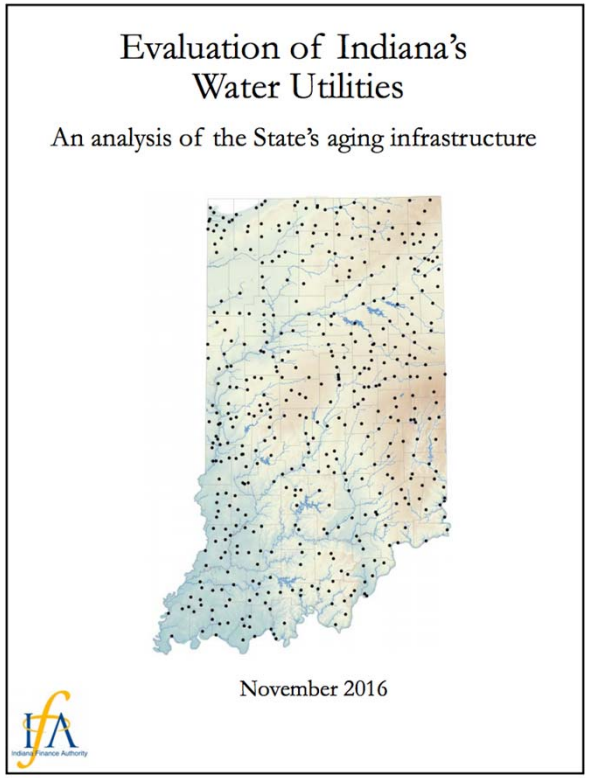
INDIANA NEEDS EFFECTIVE POLICY

Data-Driven Policy

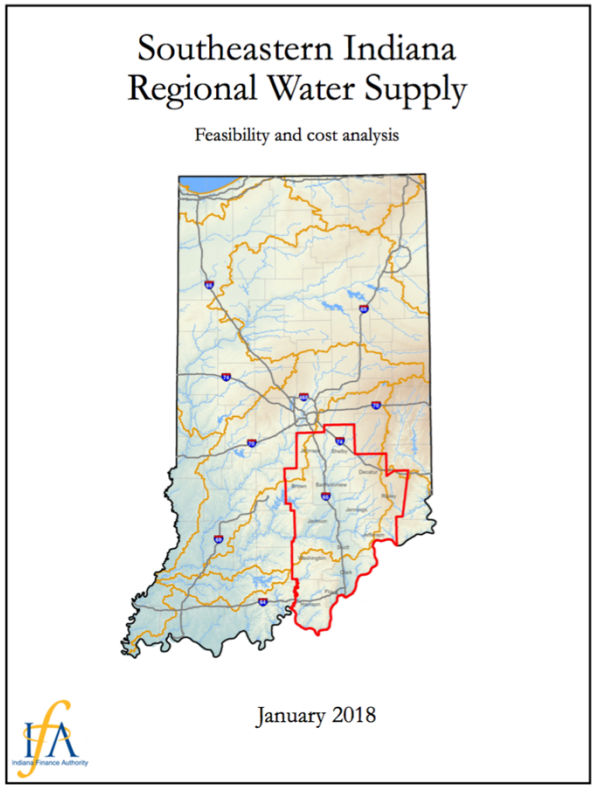
2015



2016



2017

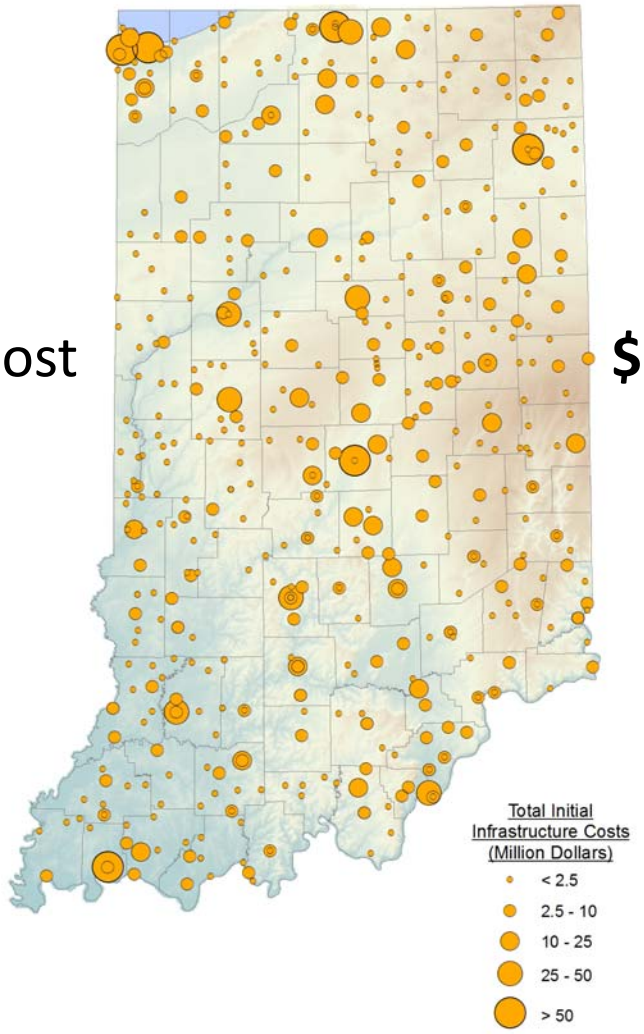


Key Insights

FINDINGS

How is need distributed across the state?

$2.3 Billion initial cost



$815 Million/yr for 20 years

Consensus of Utilities Surveyed

- Would like State to structure regional planning
- Water quality is a serious constraint on availability
- Not sure who is in charge
- None able to replace water mains in less than 100 years
- Regional cooperation among all users should add resilience to supplies and more efficient service

Should the Infrastructure Problem be Solved by Future Generations?

- The surveyed utilities felt that, while infrastructure needed to be replaced, the rate payers were not willing to pay more. They said they had no choice but to leave this problem to future generations.

- Recent laws address the needs described by all water utilities across the state.

Regional Planning

- Why
- How
- Initiation

Why plan?

Economics and quality of life

- Economic Development depends on a reliable supply of water and Indiana depends more than any other state on abundant supplies (Rosaen, 2014).

- Quality of life is enhanced by a healthy environment. This is a multi-million dollar asset that deserves protection.

Why plan?

We are competing with every country in the world for business.

If Indiana wants to **add manufacturing, increase agricultural productivity and be an attractive place to live**, we need to know our priority basins and our priority uses of water.

Our water stretches across state boundaries.

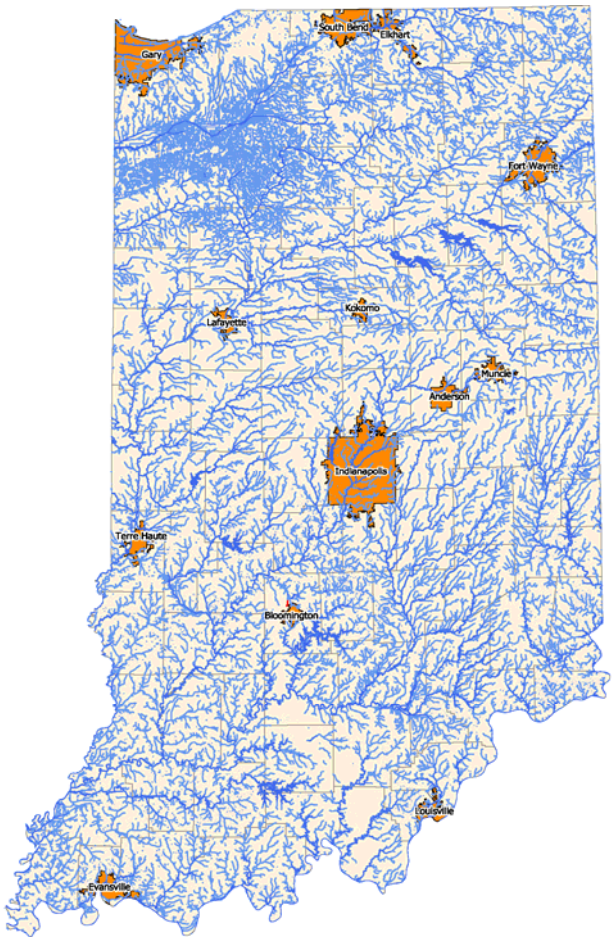
Communities in NW Ohio are considering tapping an aquifer that stretches into SW Michigan and NE Indiana

Why plan?

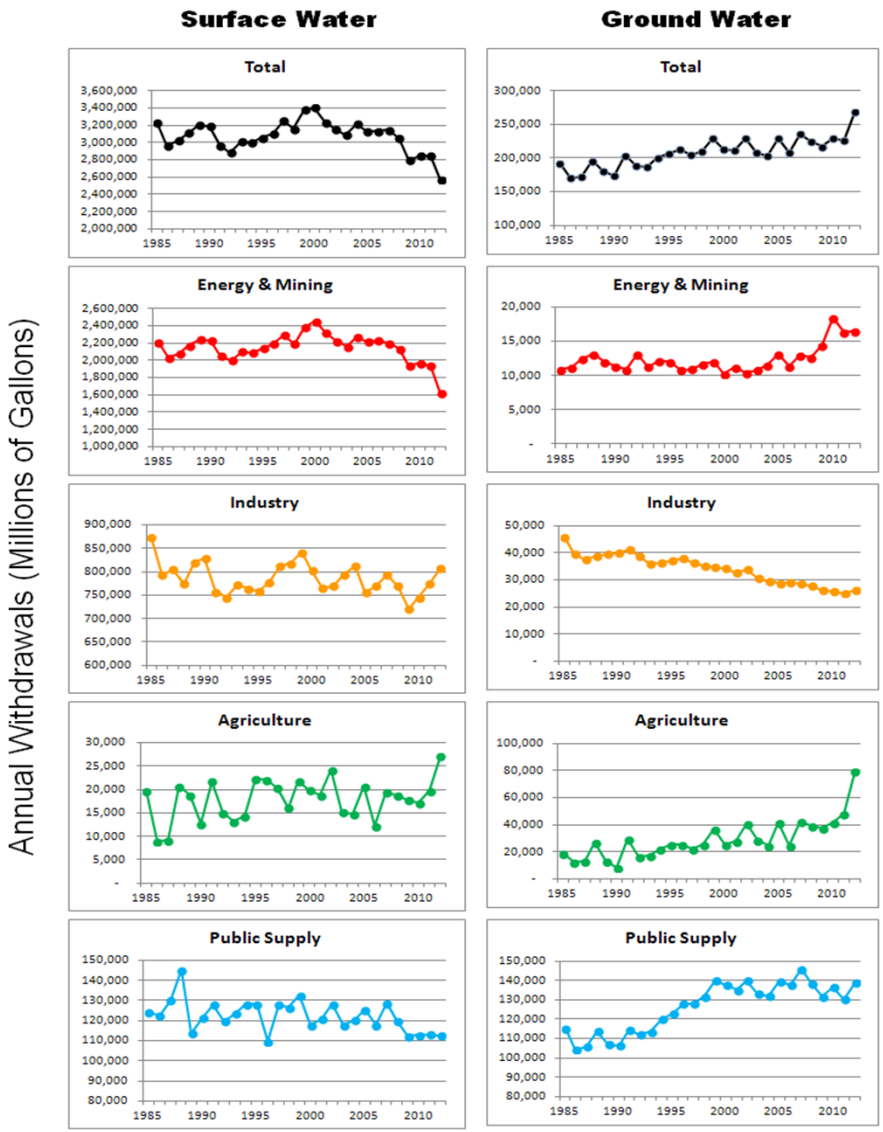
To be prepared for drought.

Climate change patterns suggest that groundwater is less available than in the past. We need to be ready to manage the roller coaster of variation that affects our options.

Where do we use water?



- Cities
- Power Plants
- Industrial facilities
- Agriculture/Irrigation



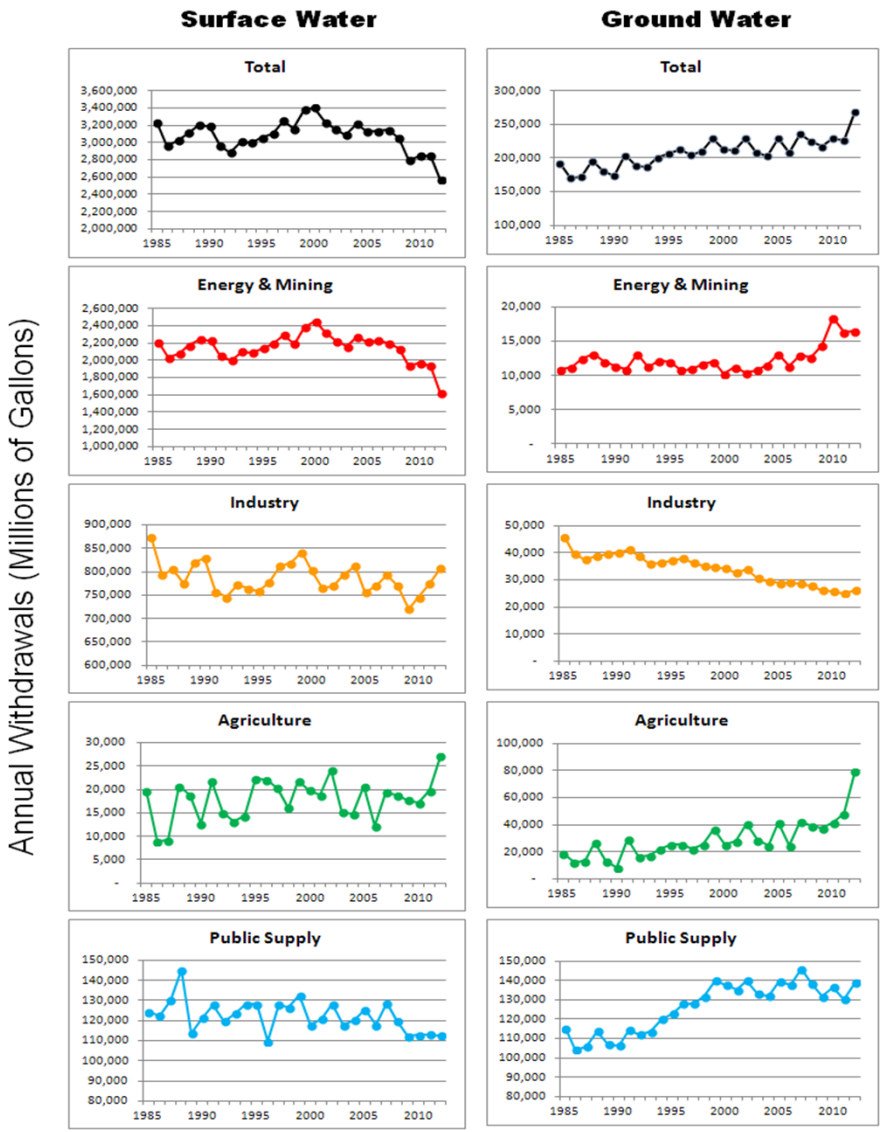
TRENDS
1987-2013

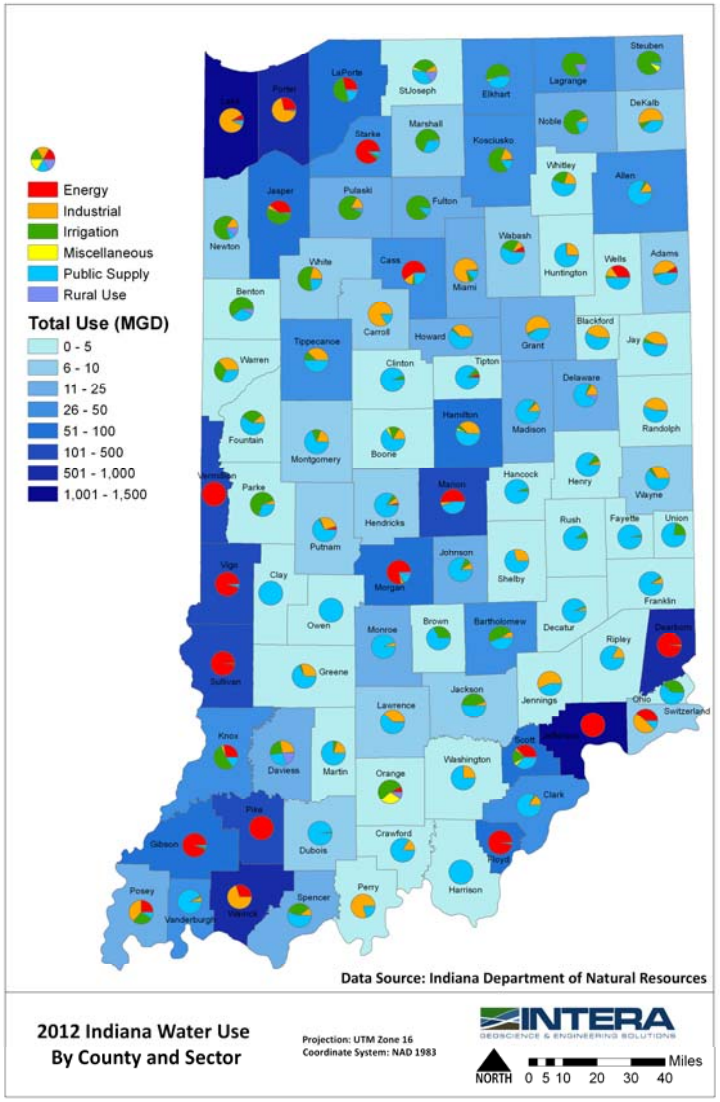
Power plants and mining

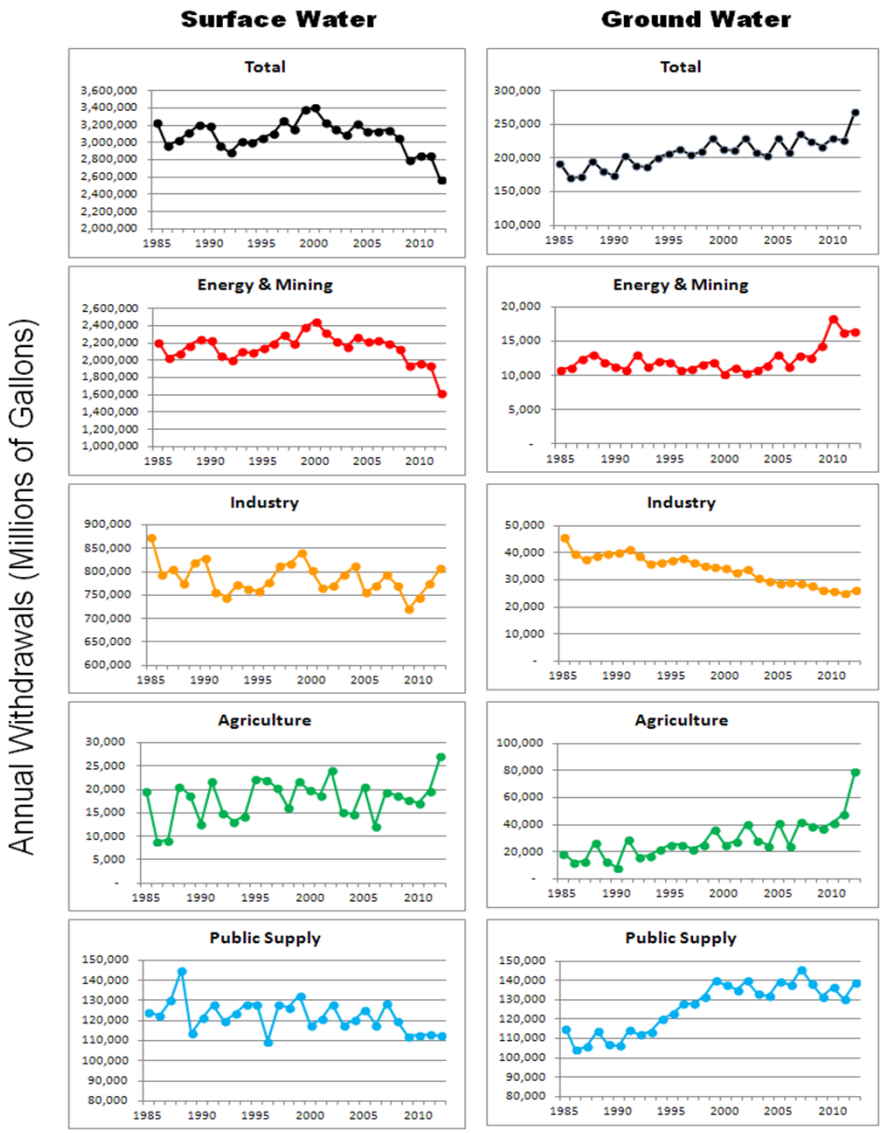
Self-supplied industrial

Agricultural Irrigation

Public supplies


Surface Water
Ground Water
Annual Withdrawals (Millions of Gallons)
Total
Energy & Mining
Industry
Agriculture
Public Supply
1985
1990
1995
2000
2005
2010


Energy
Industrial
Irrigation
Miscellaneous
Public Supply
Rural Use
Total Use (MGD)
0 - 5
6 - 10
11 - 25
26 - 50
51 - 100
101 - 500
501 - 1,000
1,001 - 1,500
Data Source: Indiana Department of Natural Resources
2012 Indiana Water Use
By County and Sector
Projection: UTM Zone 16
Coordinate System: NAD 1983
INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS
NORTH
0 5 10 20 30 40
Miles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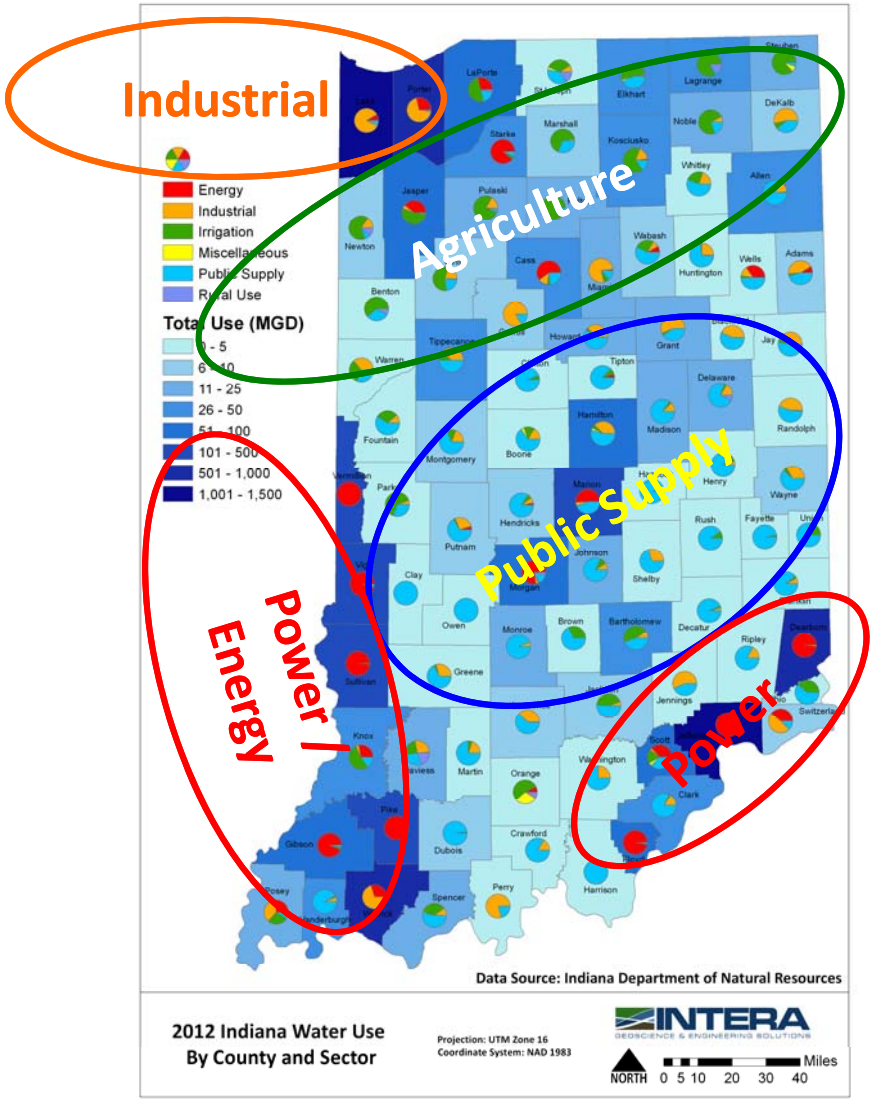
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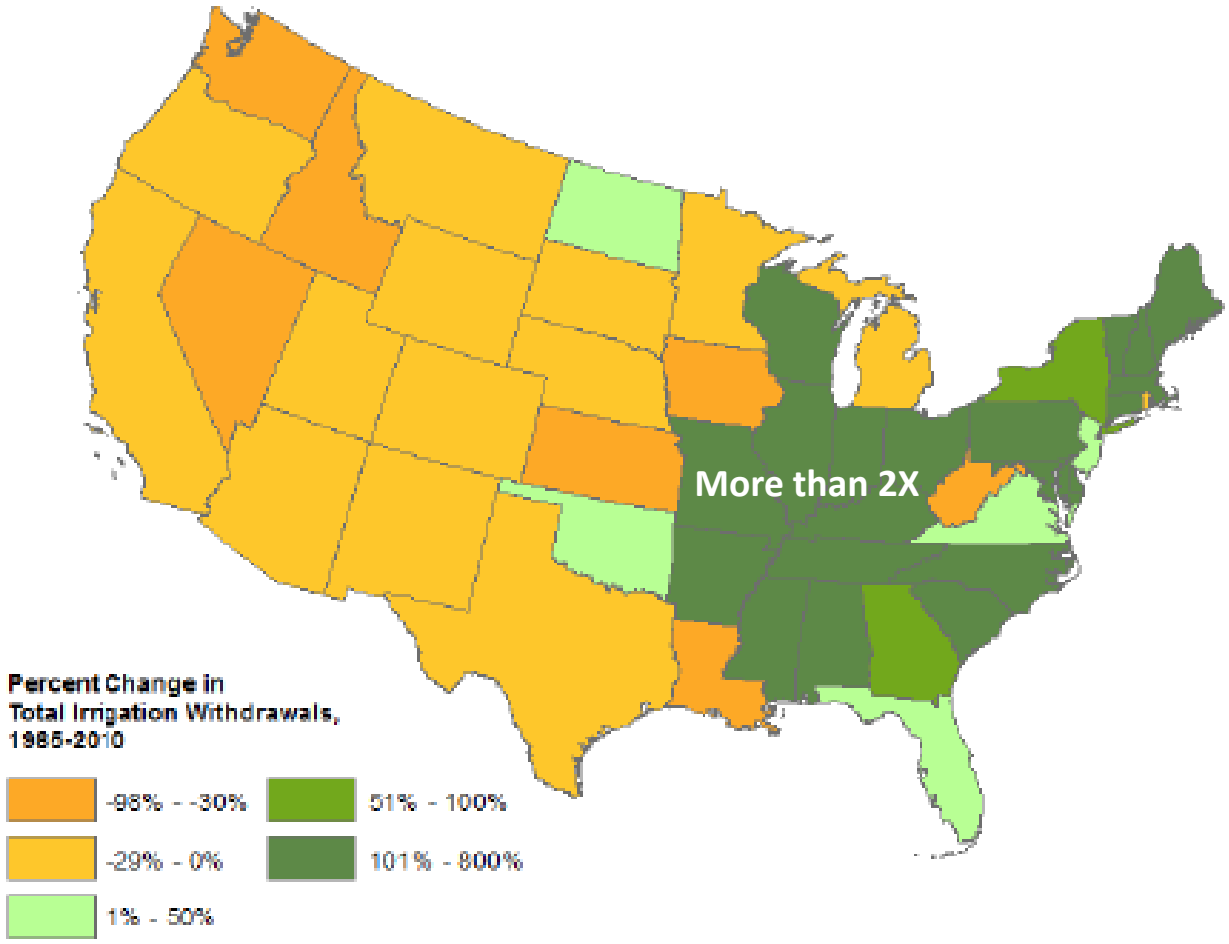
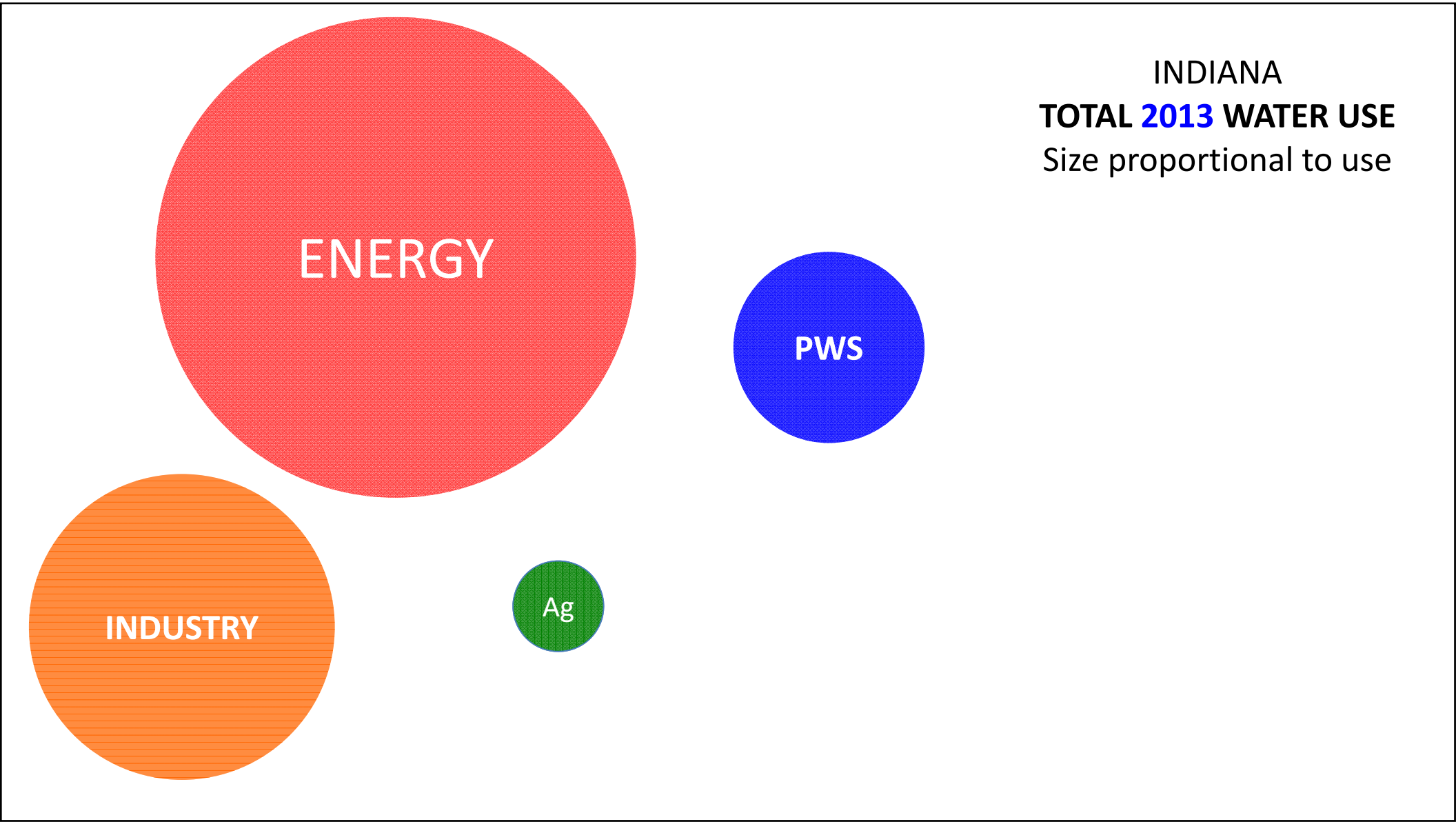
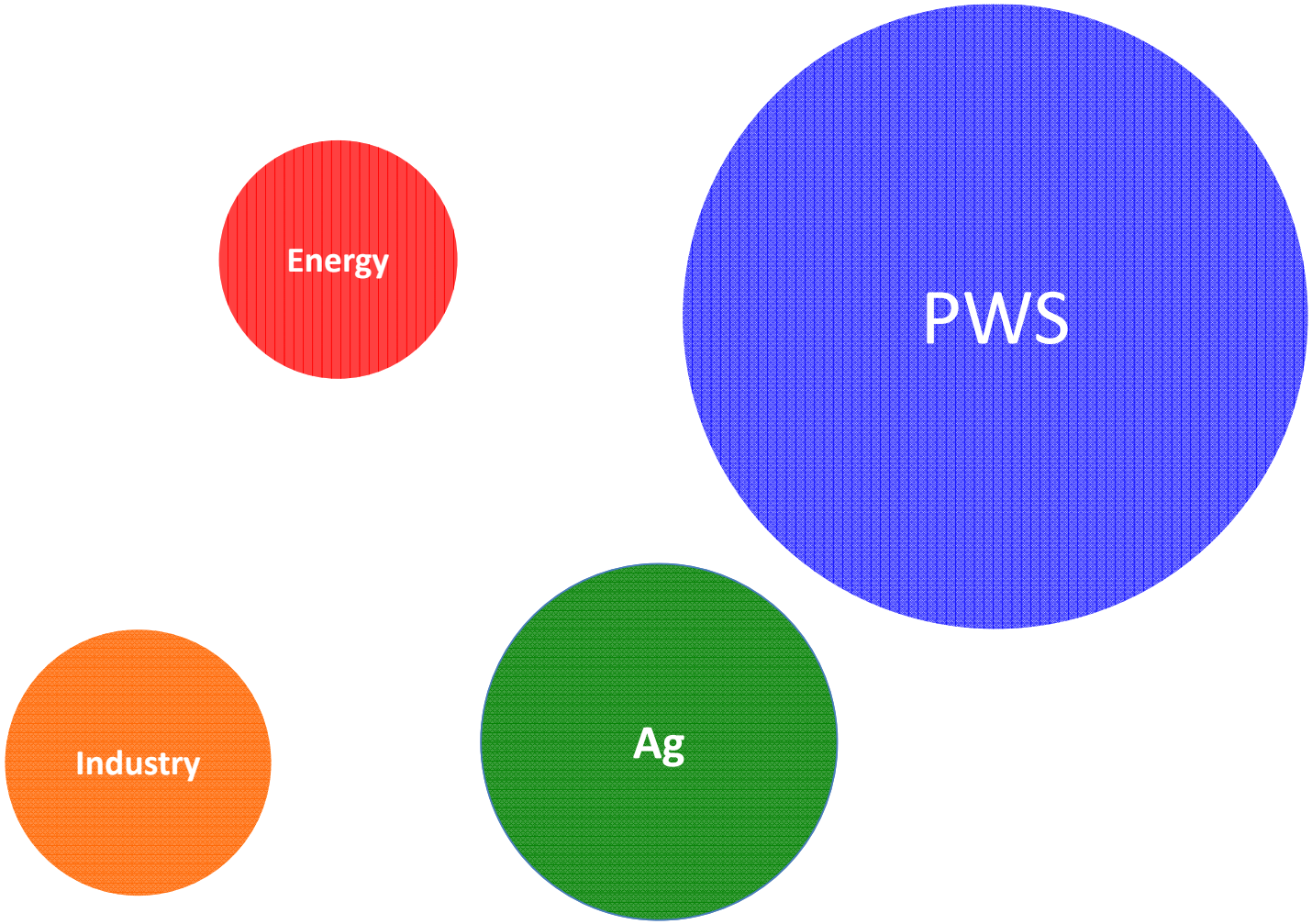
Changes in Irrigation Water Use: 1985 - 2010



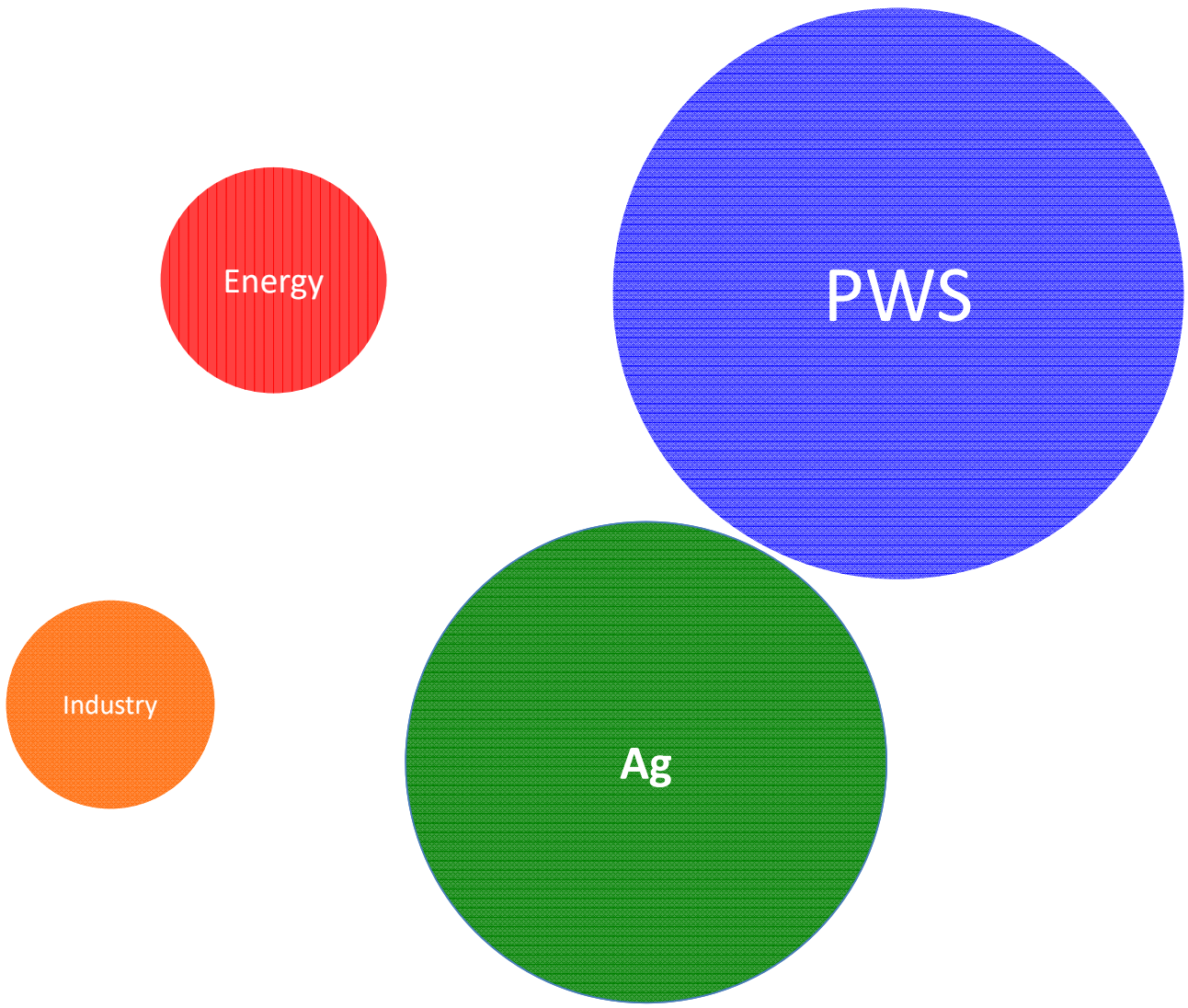
Source: USGS historical irrigation water withdrawals for the U.S.


INDIANA
TOTAL 2013 WATER USE
Size proportional to use
ENERGY
PWS
INDUSTRY
Ag

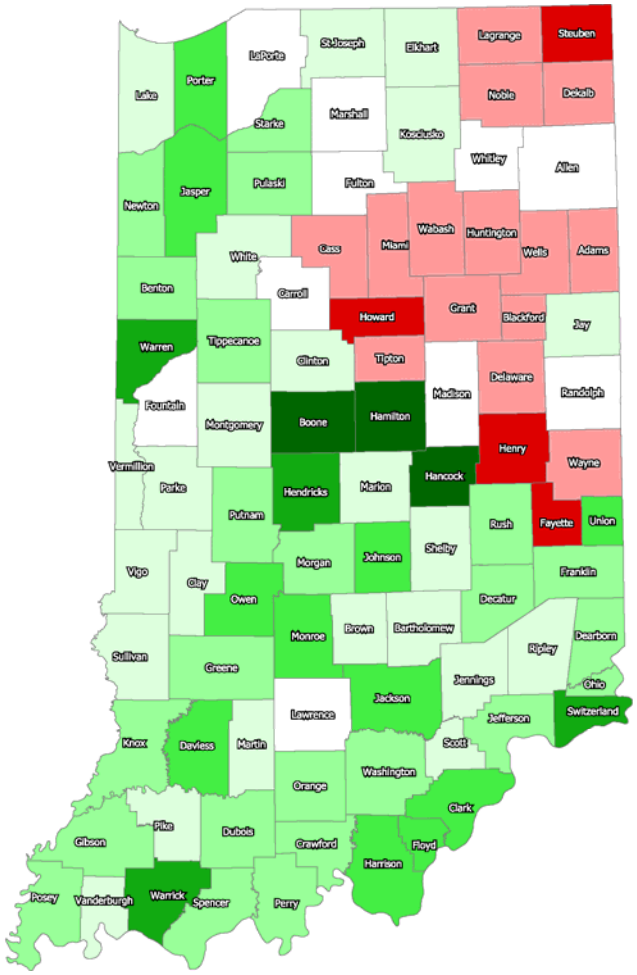
TOTAL **GROUNDWATER** USE



SEASONAL (Summer)
GROUNDWATER USE



Population Change



- Populations changing
- Power shifting
- Industrial needs less
- Agricultural irrigation

These questions need answers

- How much water will we need?

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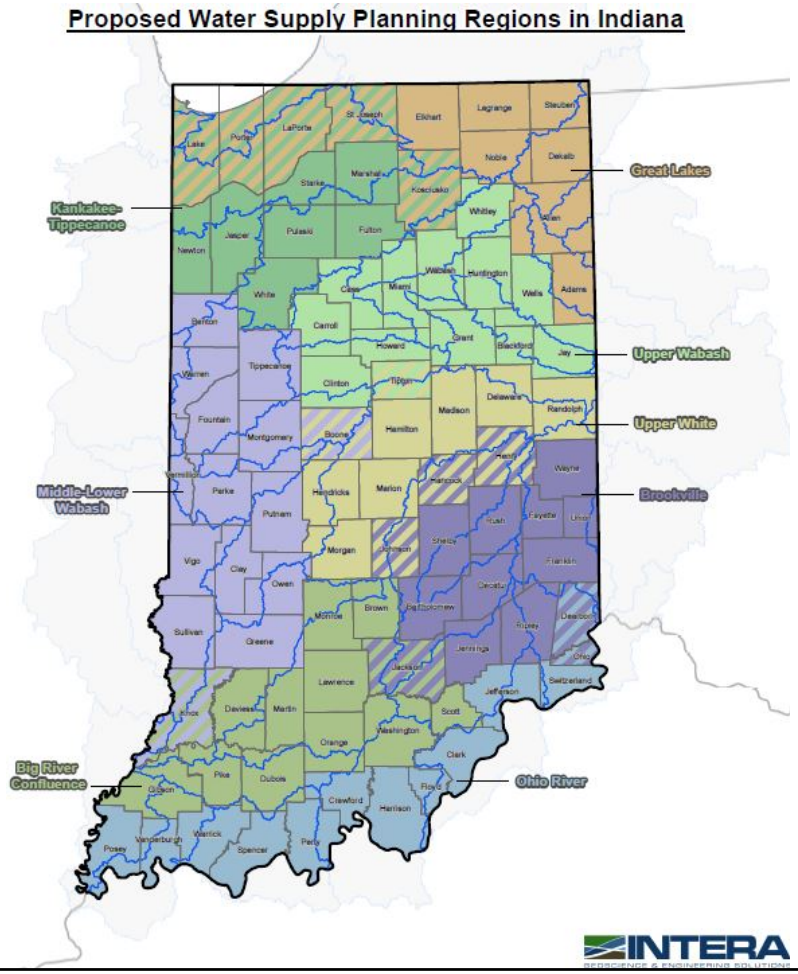
- How is groundwater connected to surface water?
- What are the supply options given expected demand?

Regional Planning Needs to Begin



Potential Pilot Basin

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Thank You

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