

# Future Water Demand in Central Indiana

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INTERA  
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2020 Indiana Water Summit

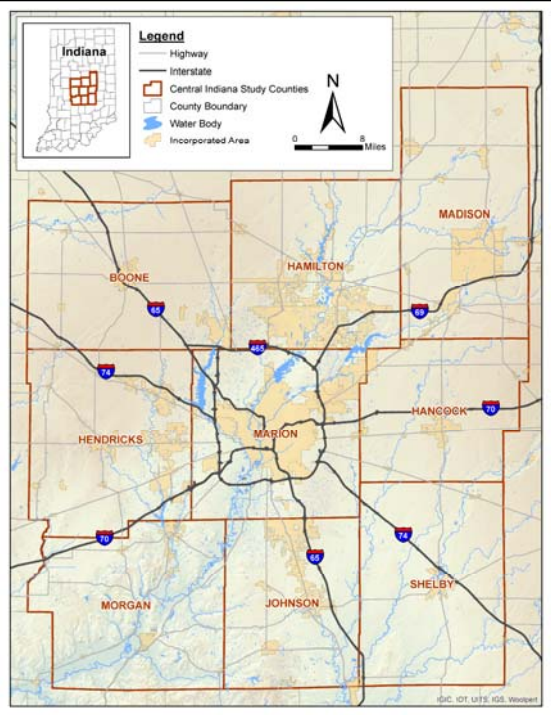
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## Water Demand Forecast

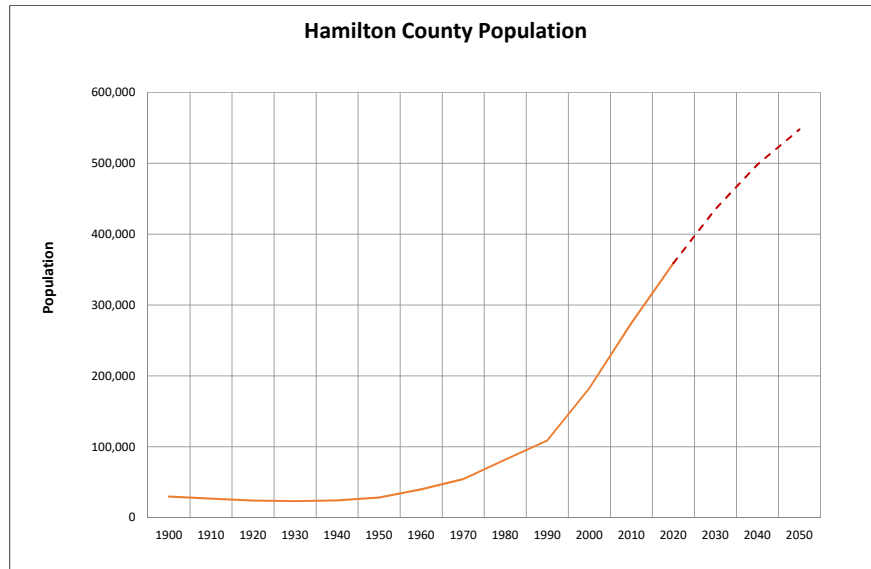
- How do we currently use water?
  - Location
  - Withdrawal rates
  - Source of water – lakes and rivers and aquifers
- Future water withdrawals?
  - How will use change?
  - Seasonal Patterns

## Central Indiana Region

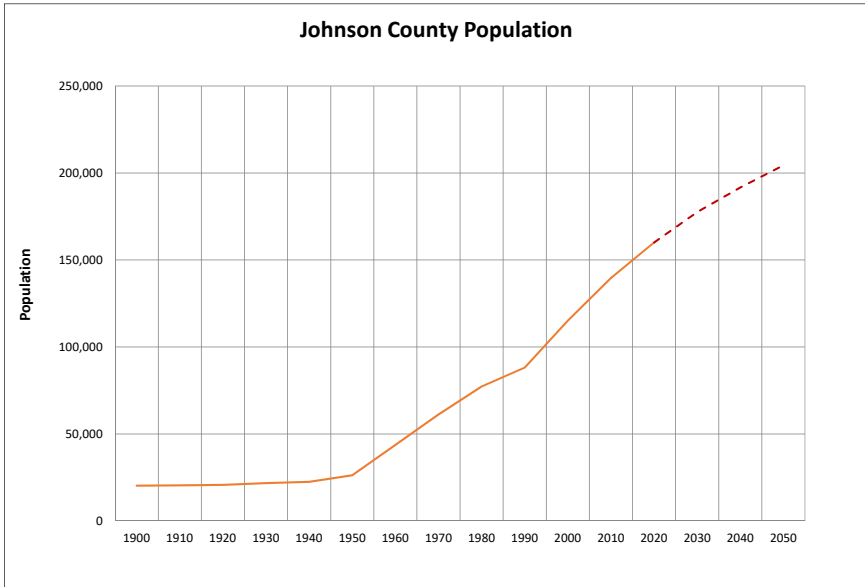
- 9-County Region
- Metro-counties surrounding Indianapolis
- Contains large portion of the Upper White River Watershed
- High population and economic growth
- Central Indiana Utility Collaborative already meeting and sharing data



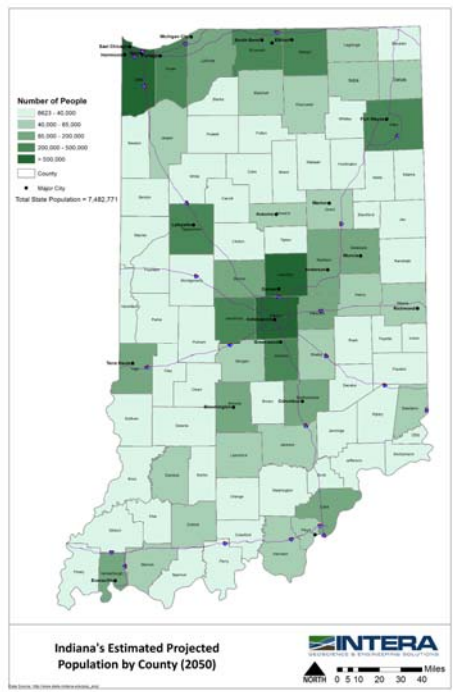
## Rapid Growth in Counties

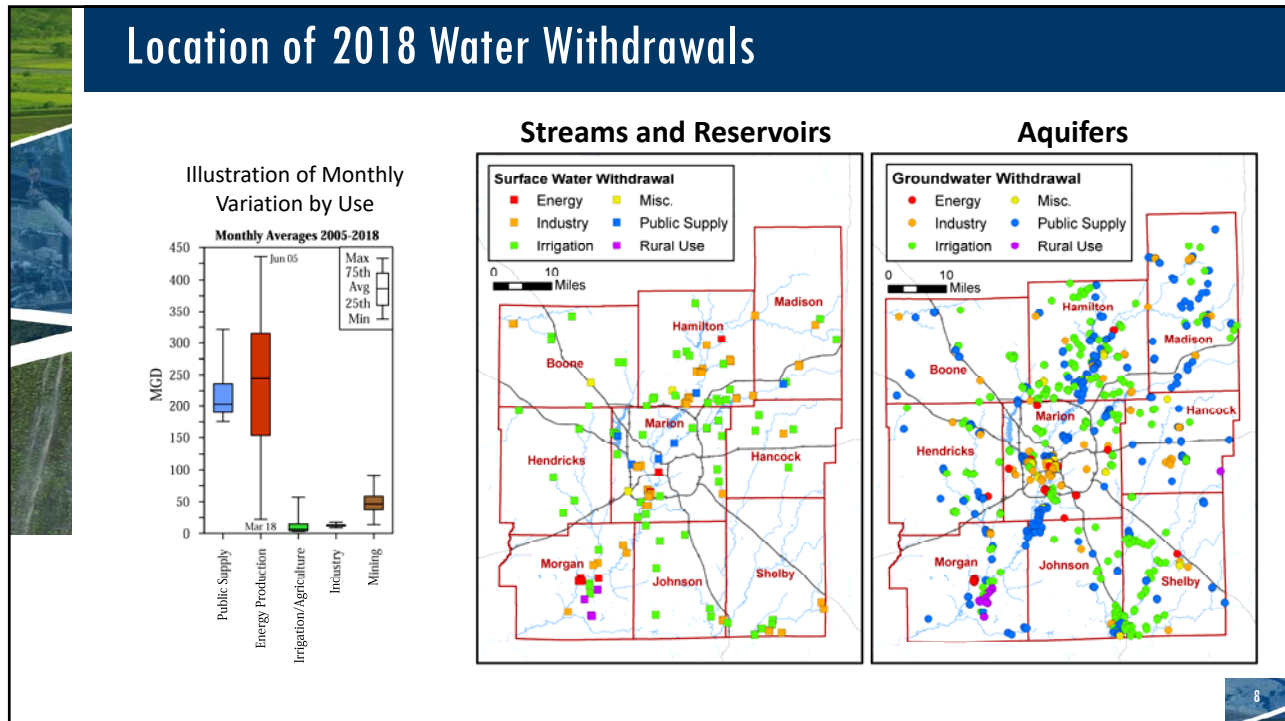
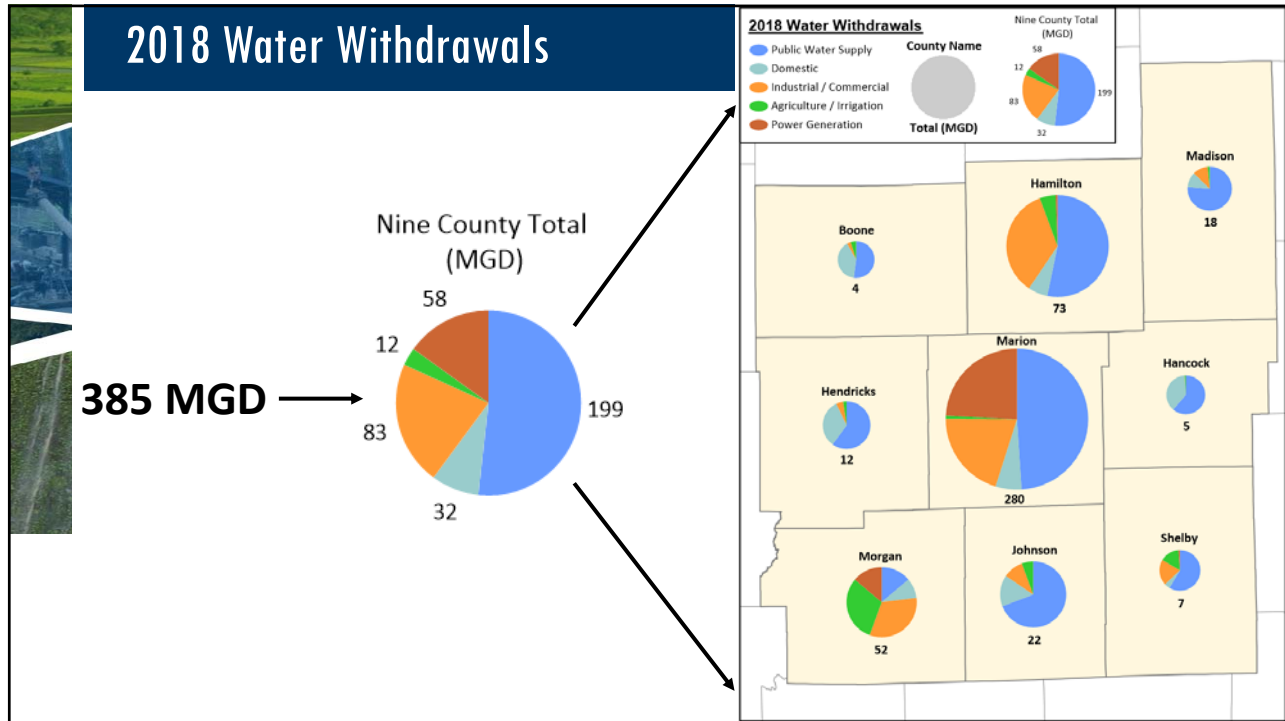


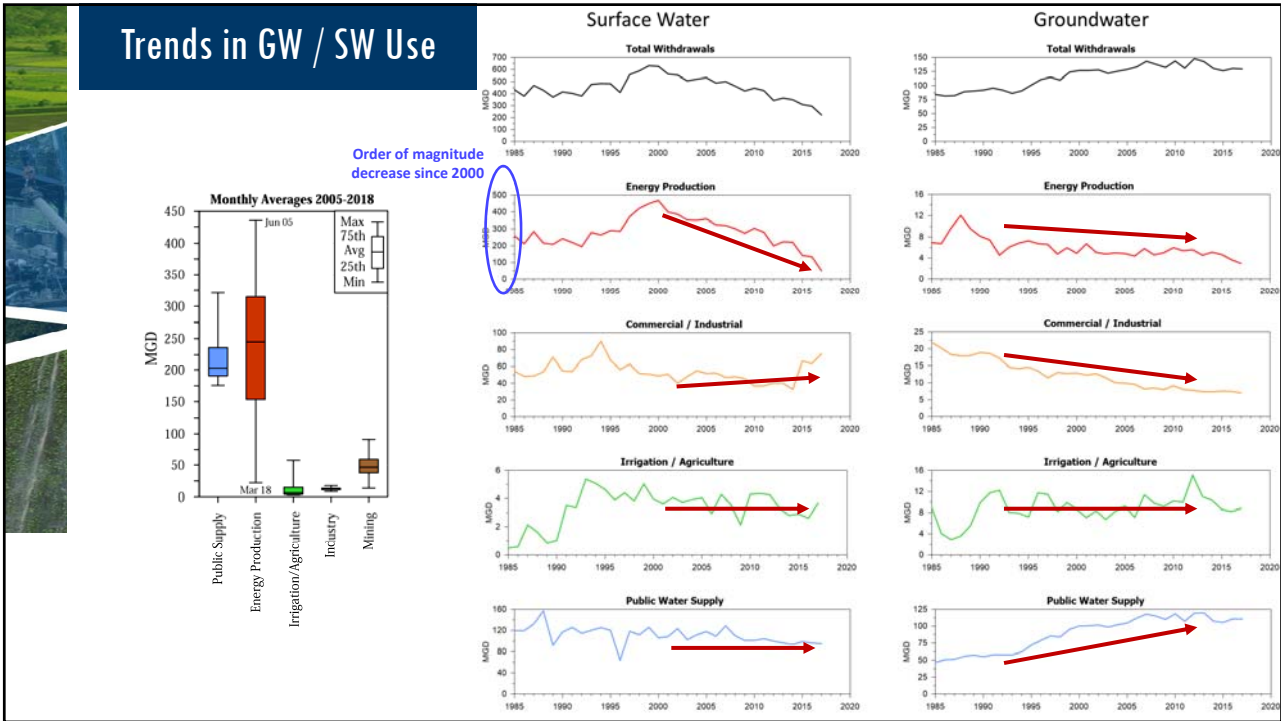
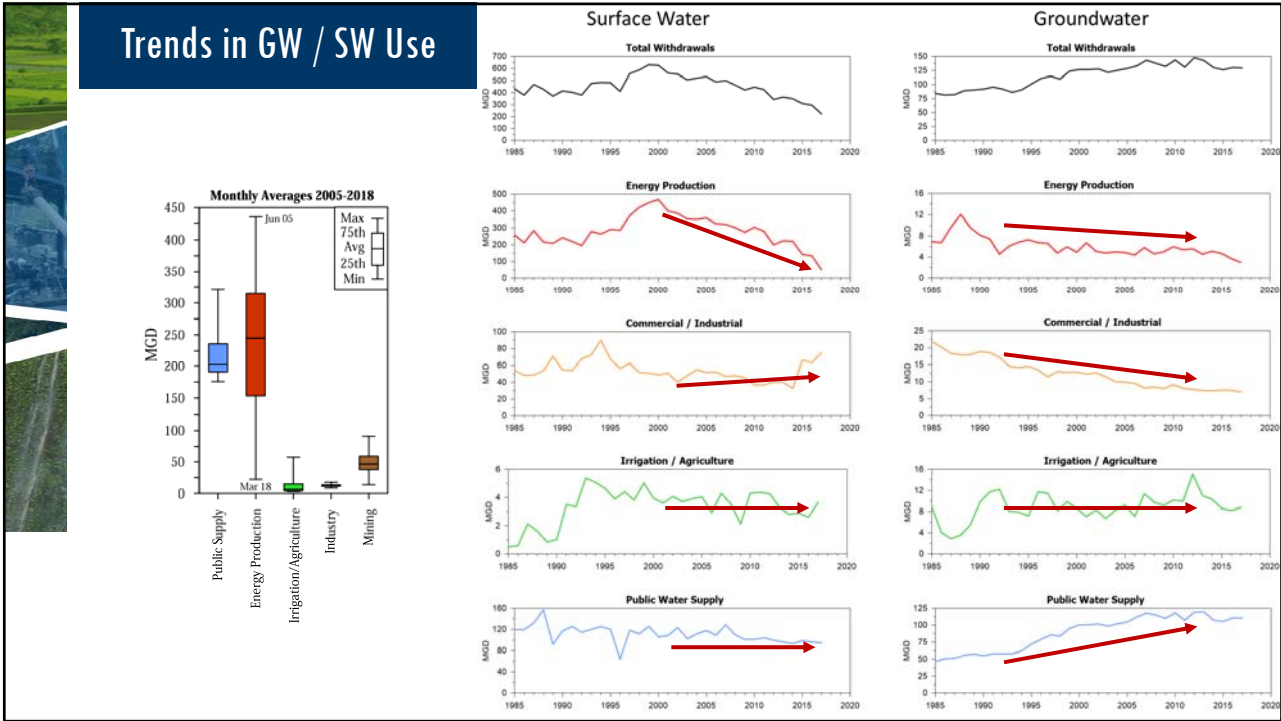
# Rapid Growth in Counties



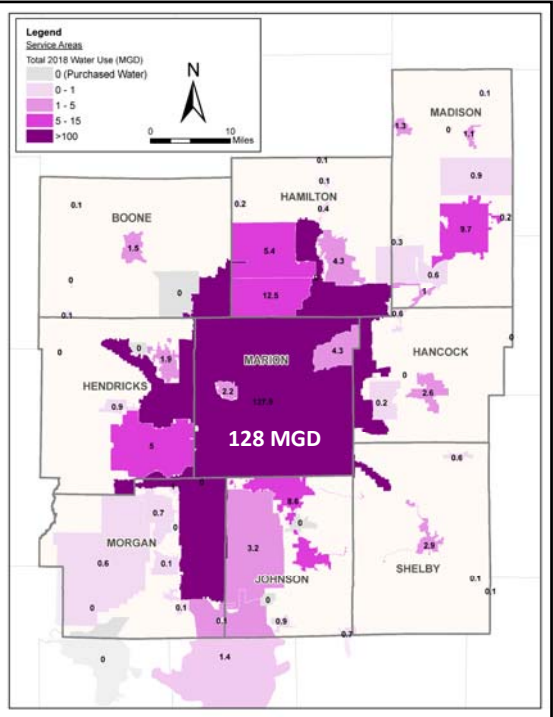
# Estimated Population





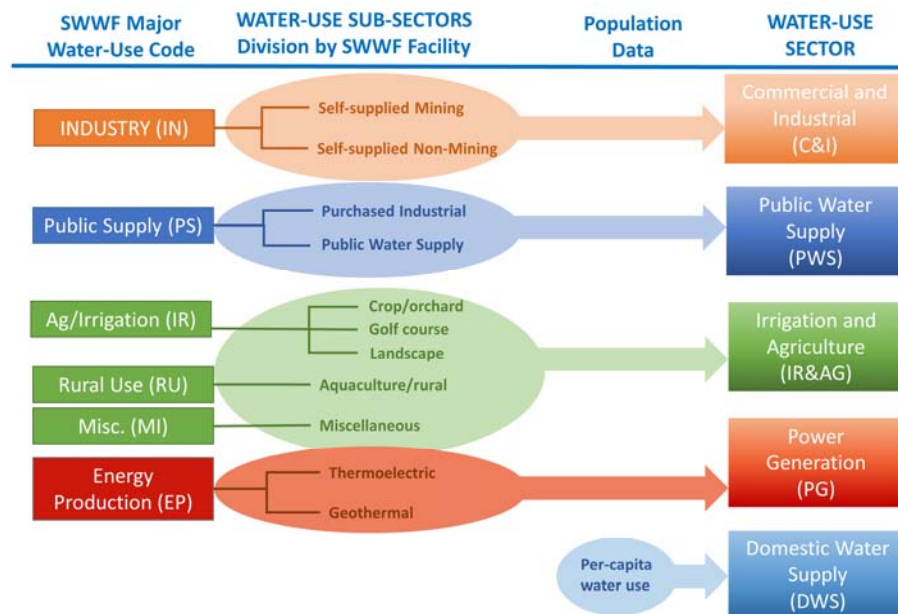


## 2018 PWS Withdrawals by Service Territory



## Future Water Withdrawals

## Data Sources



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## Water Forecast Methods

### ▪ Unit-use method

- Commercial and Industrial and Mining — gallons per employee
- Power Generation — gallons per kilowatt hour
- Domestic Supply — gallons per capita

### ▪ Historical trends

- Irrigation and Agriculture — trends from 2005-2017 withdrawals

### ▪ Multiple Regression

- Public Water Supply — gallons per capita forecast with temp, ppt, and income

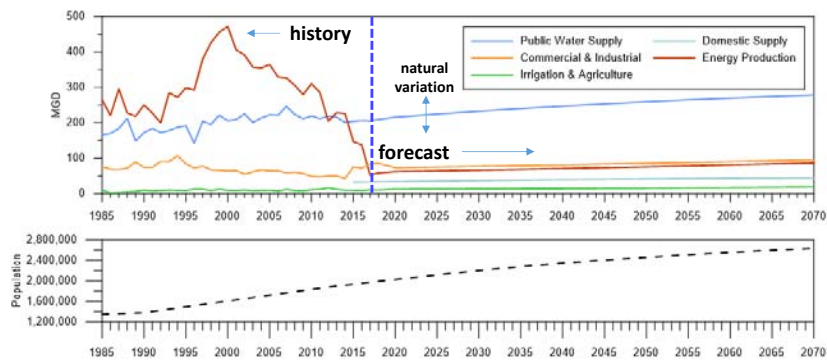
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## Water Forecast Summary\*

<p><b>Irrigation and Agriculture</b> →</p>	<p>3% of total withdrawals Increase from 13 MGD to 19 MGD</p>
<p><b>Commercial / Industrial / Mining</b> →</p>	<p>22% of total withdrawals Sector withdrawals are ~85% mining Increase from 83 MGD to 96 MGD</p>
<p><b>Power Generation</b> →</p>	<p>15% of total withdrawals Historical decrease due to fuel changes Increase from 58 MGD to 87 MGD</p>
<p><b>Domestic</b> →</p>	<p>8% of total withdrawals Increase from 32 MGD to 45 MGD</p>
<p><b>Public Water Supply</b> →</p>	<p>52% of total withdrawals Largest sector / highest growth Increase from 199 MGD to 250 MGD</p>

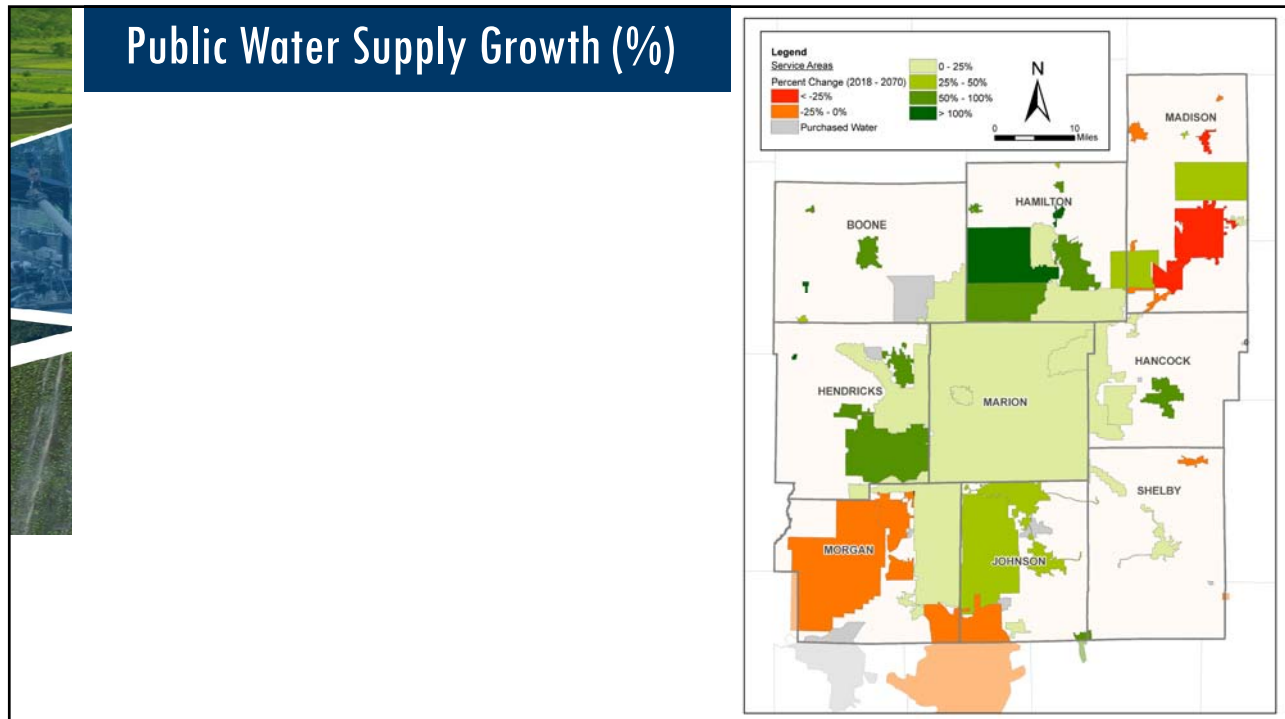
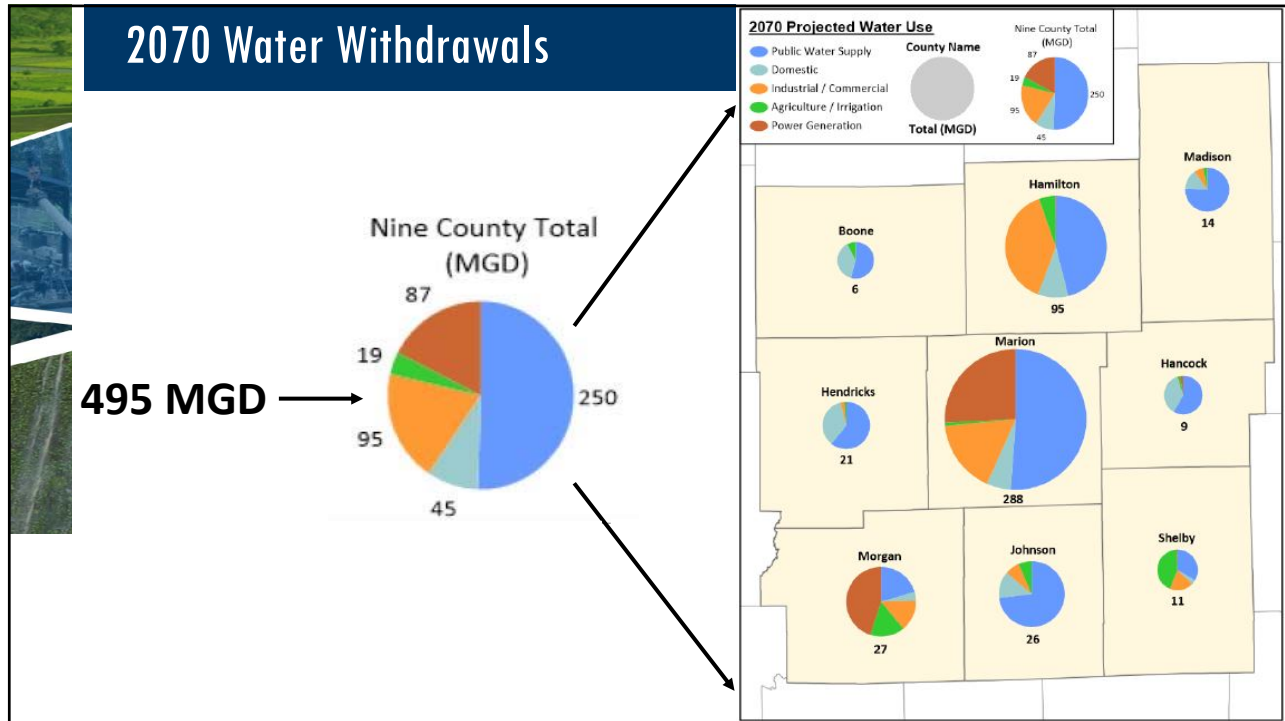
\*Percent withdrawals from 2018; Increases reported from 2018-2070

## Forecast of Withdrawals by Sector

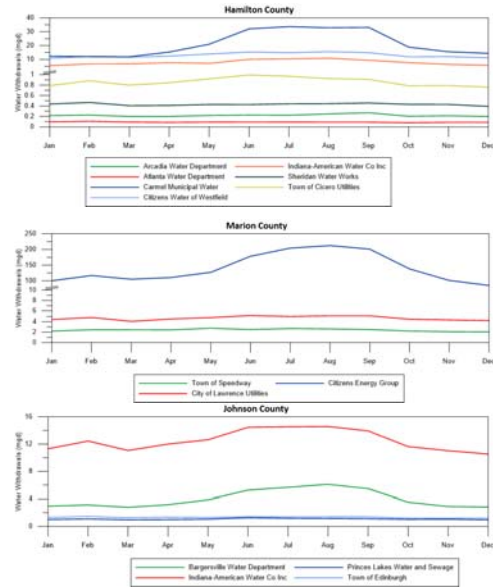
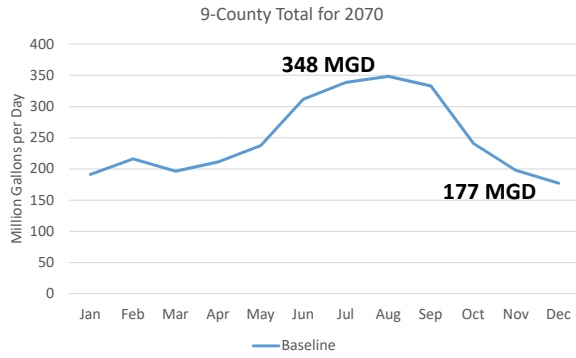


— Power Generation — Public Water Supply — Commercial & Industrial — Irrigation & Agriculture - - - Population





## Forecasted monthly withdrawals — Seasonal Variation — PWS



## Climate Change Scenarios

### Hot / Dry

- Increase in temperature 3.1 – 3.2°F for 2035 and 6.0 – 6.2 °F in 2060
- Decrease in precipitation 0.3 – 0.6% in 2035 and 0.5 – 1.2 % in 2060

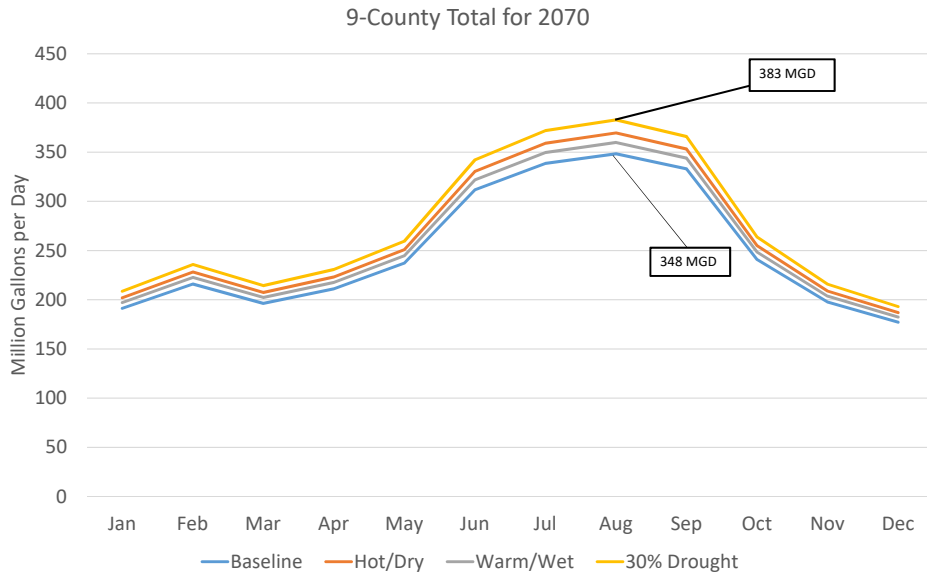
### Warm / Wet

- Increase in temperature 2.3°F for 2035 and 4.4 – 4.5 °F in 2060
- Increase in precipitation 6.0 – 6.5% in 2035 and 11.7 – 12.6% in 2060

### 30% Drought

- Increase in temperature 3.1 – 3.2°F for 2035 and 6.0 – 6.2 °F in 2060
- Decrease in precipitation 30% from Hot/Dry scenario

## Public Water Supply Scenarios + 25 to 50 MGD



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Is there enough water in the region to meet future demands?

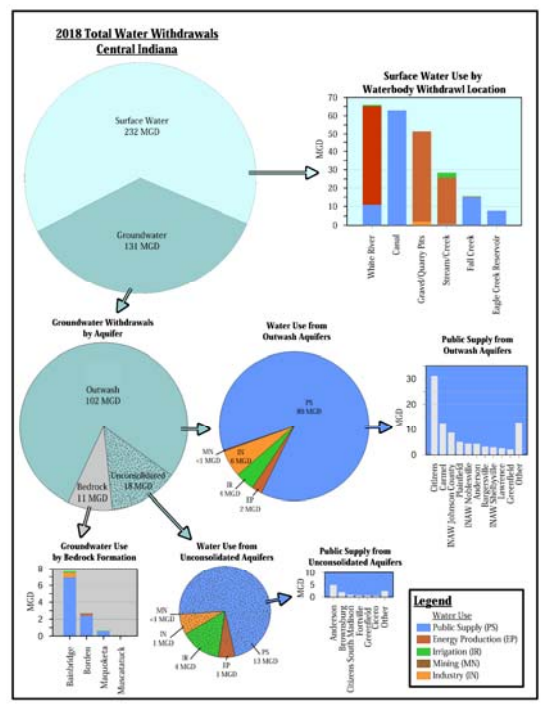
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# Water Resource Used in Region 2018

**Surface water** from the White River is used for Indianapolis drinking water as well as cooling water and mining.

**Groundwater** from the outwash aquifer is primarily used for municipal drinking water and other uses.

**Deep Bedrock Aquifer** also is used by municipal systems for drinking water and other uses.



## QUESTIONS

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