Hazen

Ohio Environmental Protection Agency

Ohio Department of Natural Resources

Ohio Water Development Authority

Central Ohio Regional Water Study

Kathleen Smith, Hazen and Sawyer
June 16, 2025

Ohio™ THE HEART OF IT ALL™

Forbes

FORBES > LIFESTYLE > TRAVEL

Columbus Is America's Fastest Growing City And A Wonderful Place To Visit

Katie Chang Contributor ⓘ

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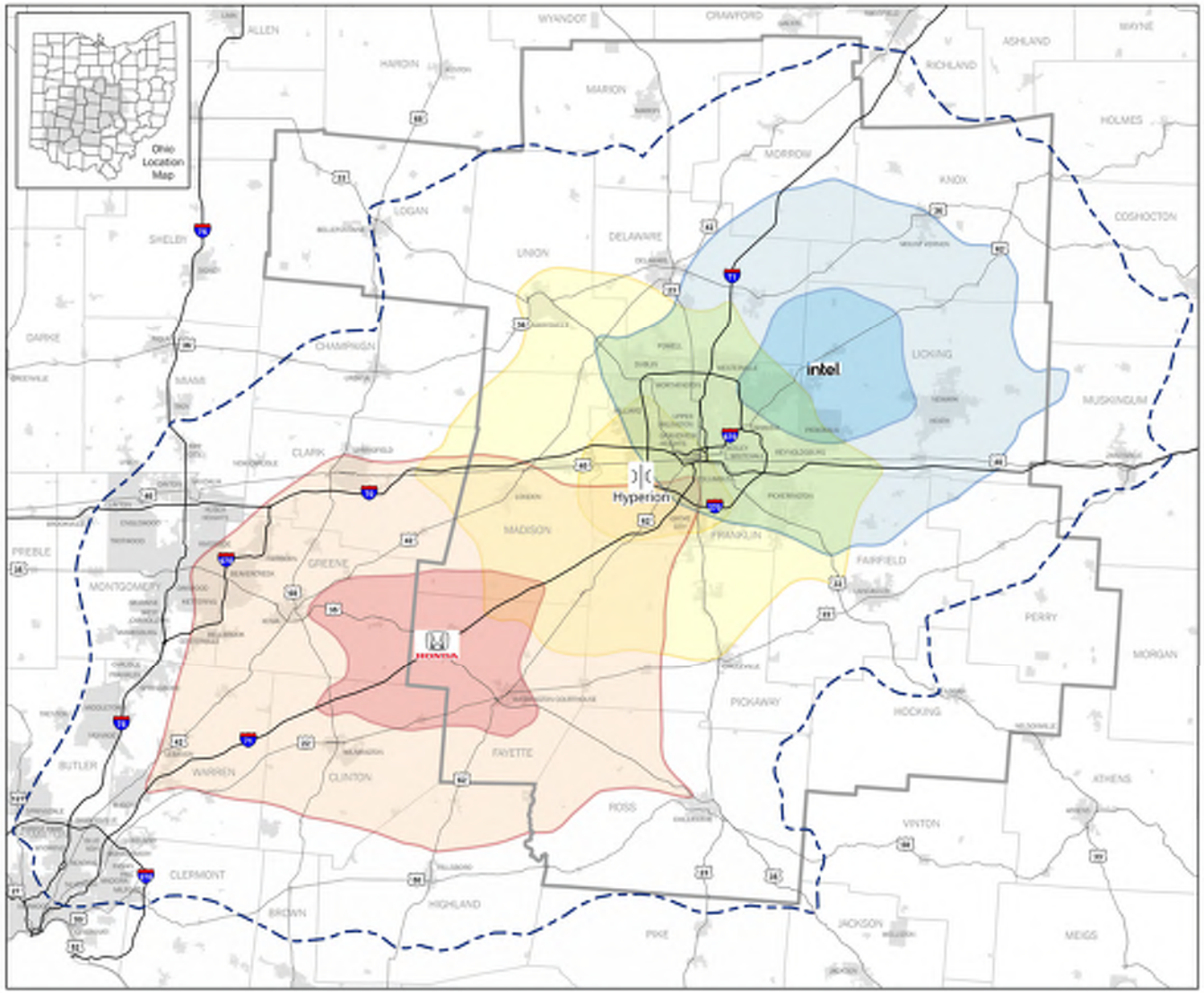
Apr 14, 2024, 08:00am EDT

COLUMBUS HOUSING MARKET

Columbus named the second-fastest growing U.S. city in 2024, highlighting housing needs

by: Katie Millard
Posted: Mar 14, 2025 / 07:00 AM EDT
Updated: Mar 13, 2025 / 09:32 PM EDT



Major New Development Driving Times

Intel
- 20 minutes
- 40 minutes

Honda
- 20 minutes
- 40 minutes

Hyperion
- 20 minutes
- 40 minutes

- Within 60 minutes of a Development
- MORPC Area
- City/Village

Note: Travel assumed by car. Travel times are approximate from Intel, Hyperion, and Honda sites out at 5pm. Buffers generated using ESRI Network current conditions.

N

0 10 20

Miles

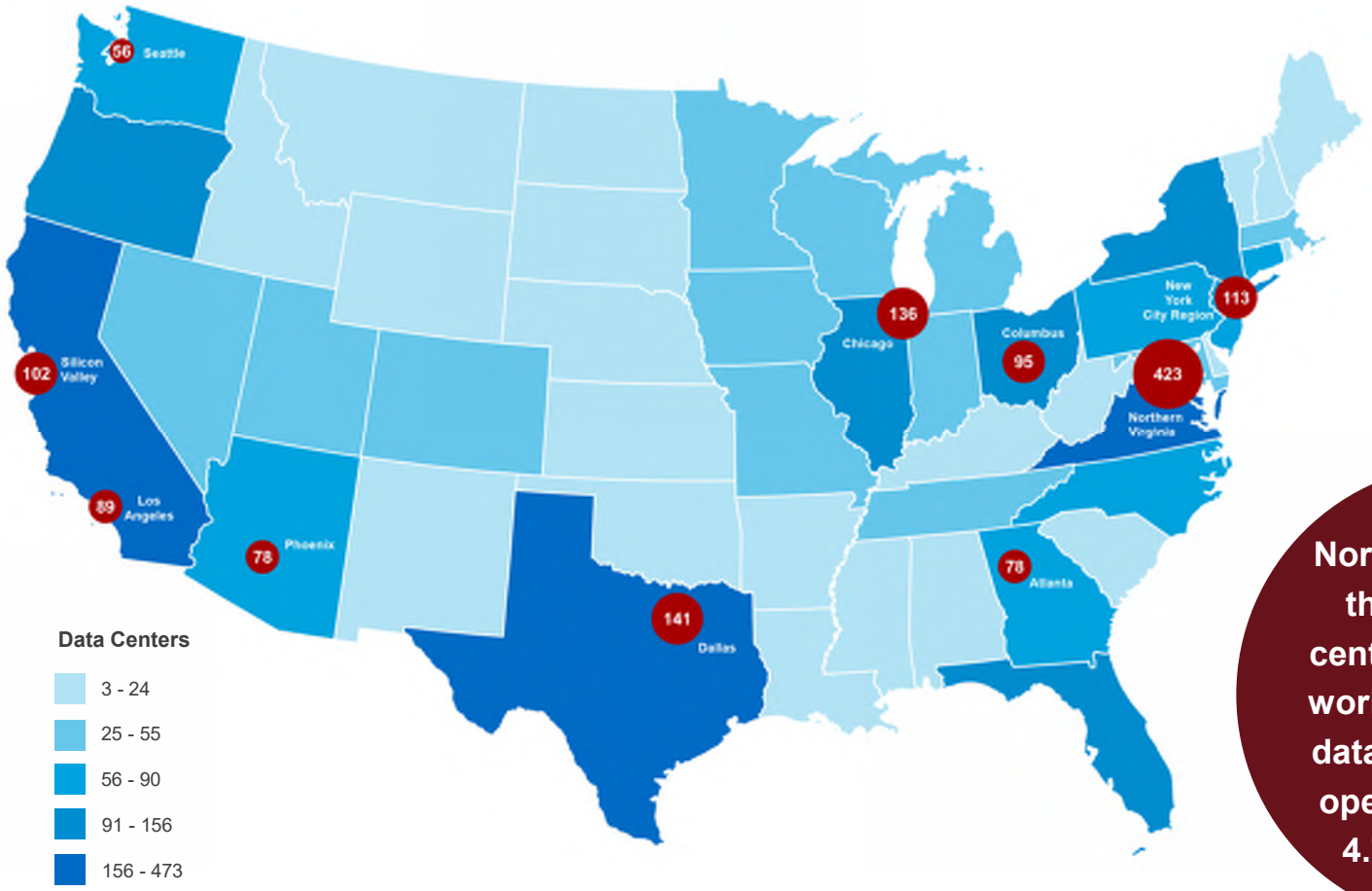
MORPC

The information shown on this map is compiled from various sources made available to us which we believe to be reliable. N:\Arc\GIS\LOCAL\MajorDev\MajorDevDriveTimes.aprx 2/14/2023

Ohio

Environmental Protection Agency

Ohio Ranks #4 in Data Centers Nationally



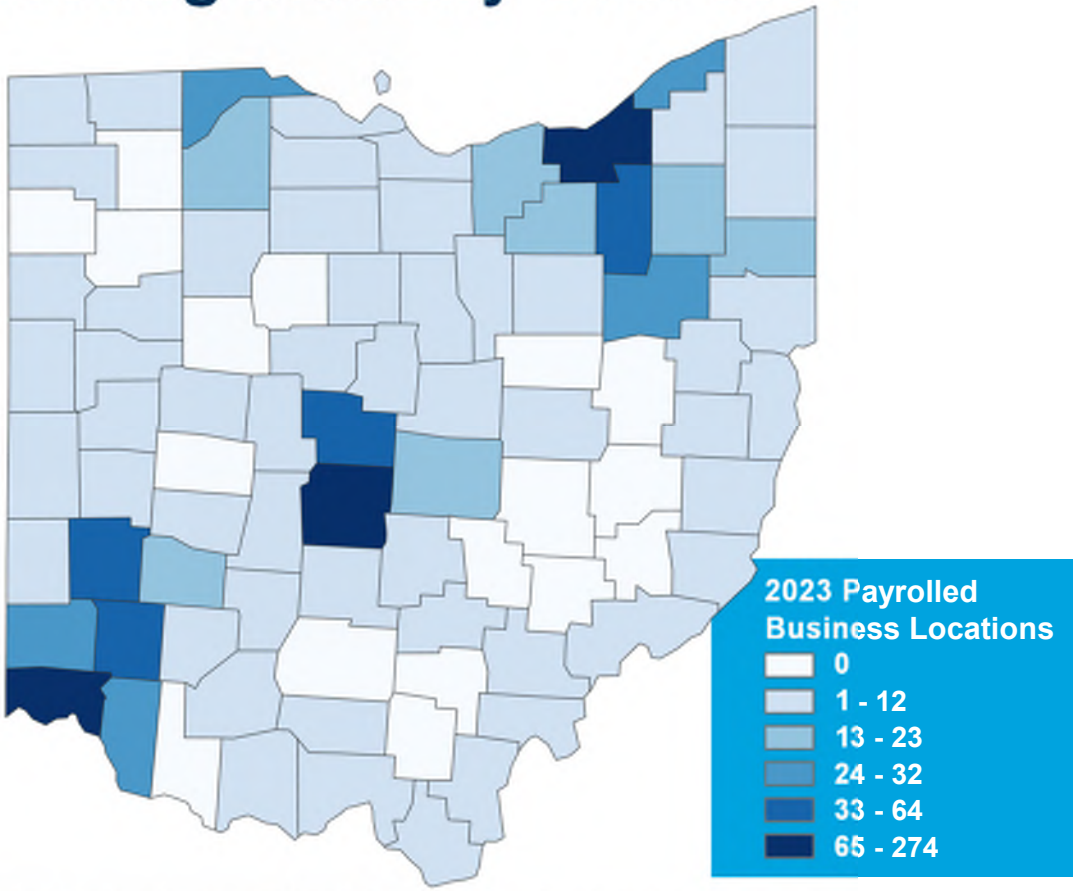
Columbus is a top 10 data center market on par with tech hubs such as Silicon Valley and New York City

Northern Virginia is the largest data center market in the world, with over 400 data centers and an operational load of 4.7GW of power

Sources: https://www.datacentermap.com/usa/, https://www.cushmanwakefield.com/en/insights/global-data-center-market-comparison

This document is not a public record and its content should not be reprinted in any other document. Ohio Revised Code 149.43(A)(1)(bb) and 187.04(C)(1) and (2)

Dramatic Growth in the Data Processing and Hosting Industry over the Past Decade



Source: Lightcast 2024.3, 2023 Payrolled Business Locations in NAICS 51821: Data Processing, Hosting, and Related Services
Note: NAICS 51821 includes all manner of data hosting activities, including web hosting, application service provisioning, and data storage and management

Data Processing and Hosting Growth

Since 2011, Ohio has had over a 384% growth to now over 1,800.

JobsOhio

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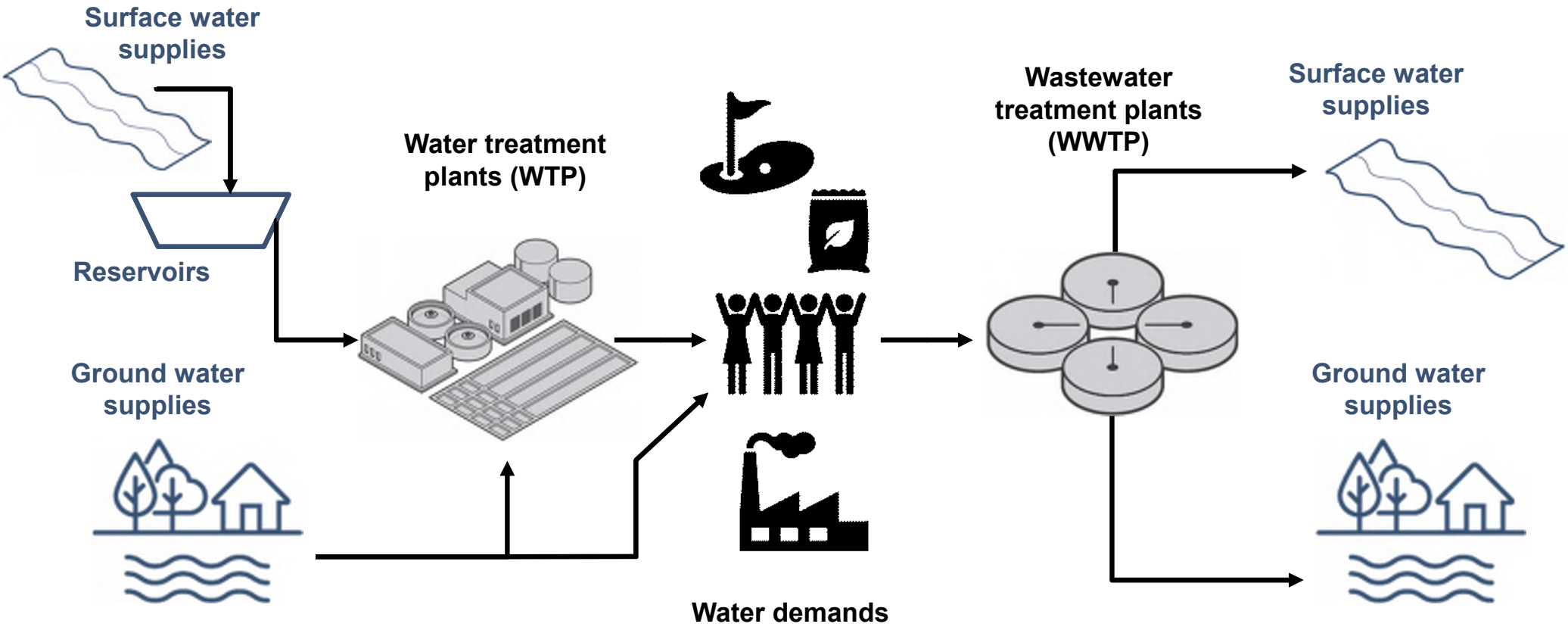
MORPC

- Comprehensive Water Study:
  - Current availability
  - Current demand
  - Projected future demand 2030, 2040, & 2050
  - Gap analysis
  - Regionalization recommendations
  - Water reuse opportunities
  - Siting locations for new mega water users

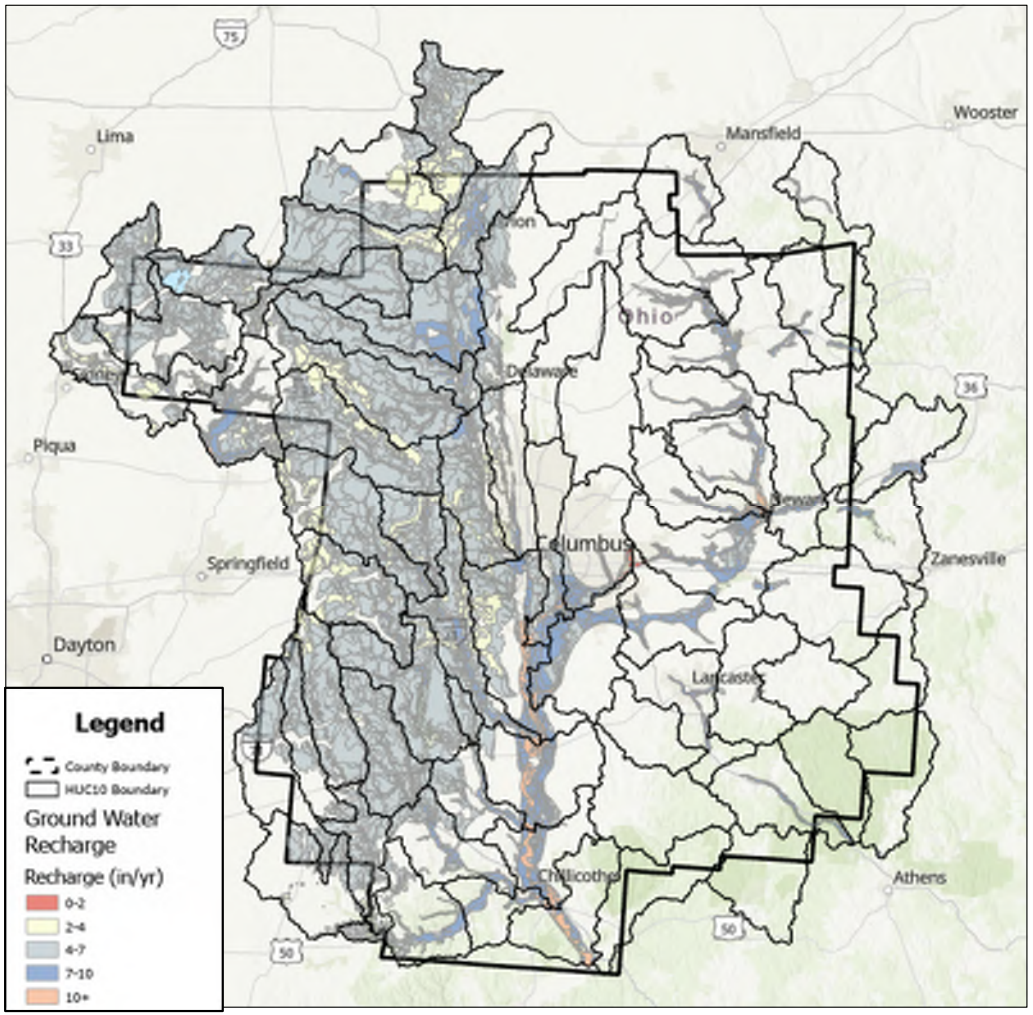
Central Ohio Regional Water Study

Model Components



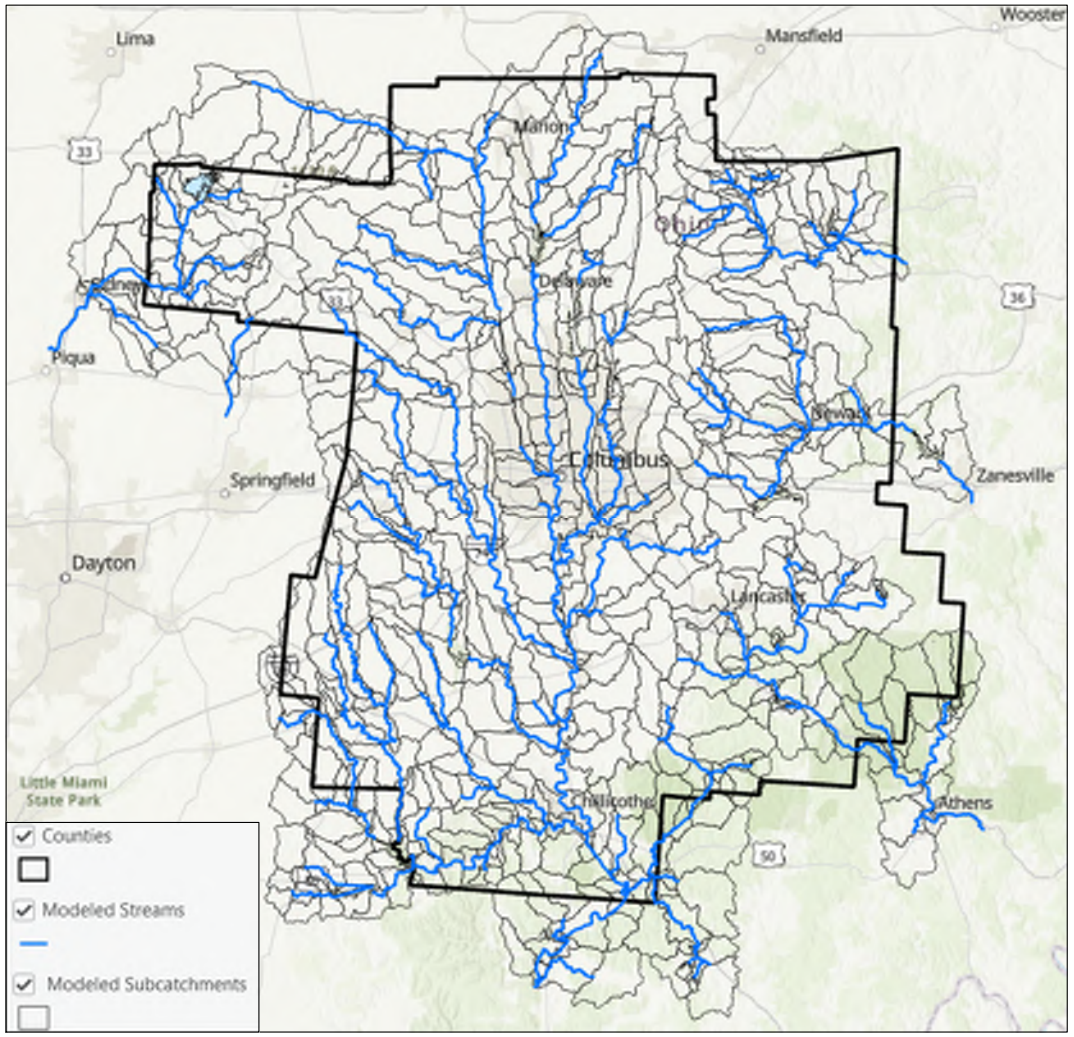
Raw Ground Water Availability

- Ground water availability was estimated at the HUC10 level
- Estimated ground water availability is a function of both yield and recharge
- Shaded areas of the map show the recharge values within the high yielding aquifers
- There is roughly 520 MGD of available ground water across the 15-County region

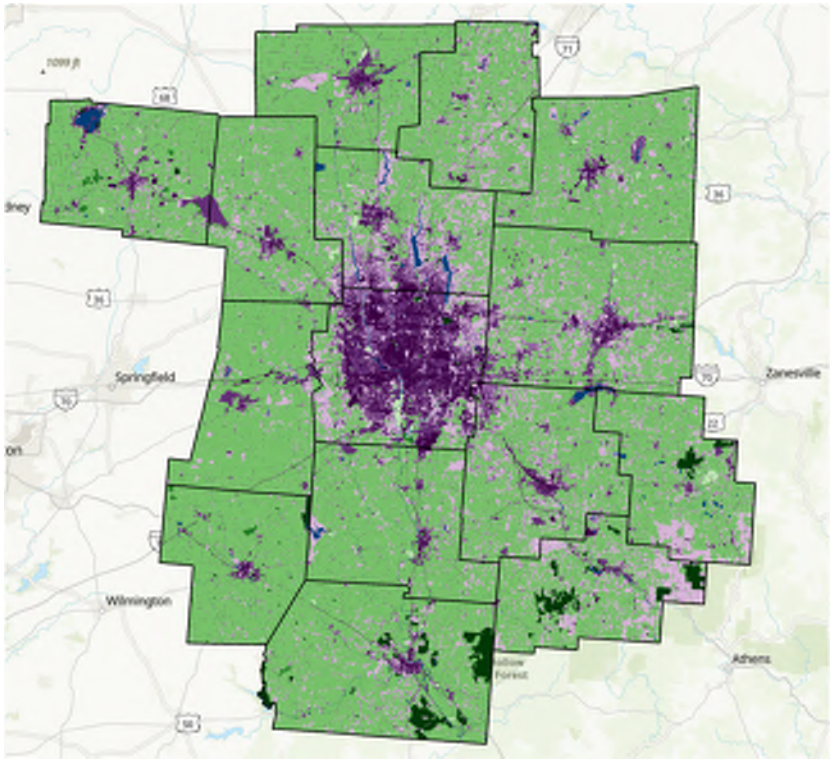


Raw Surface Water Availability

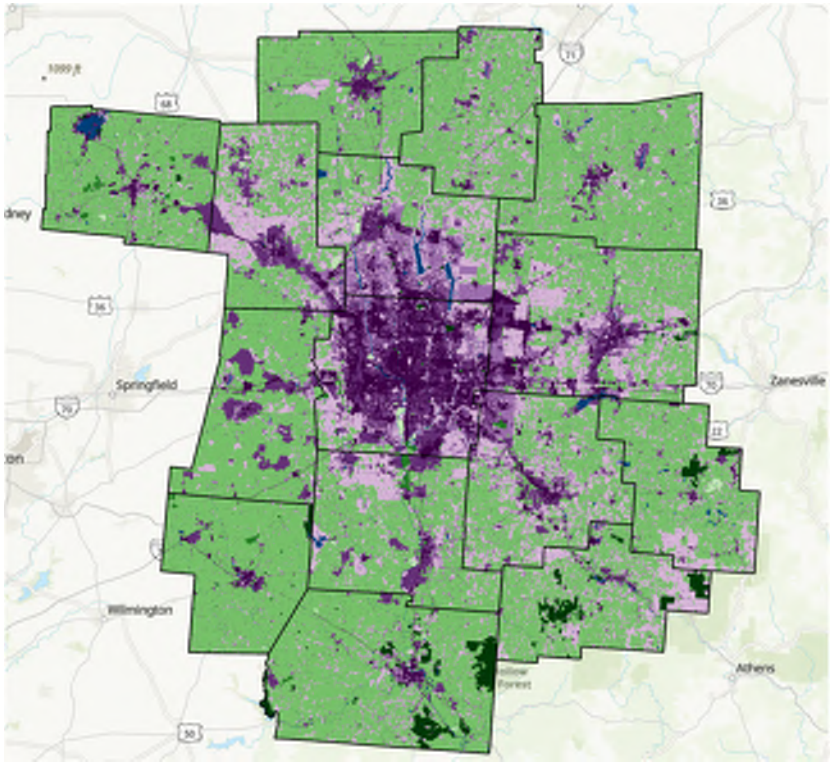
- Surface water inflows into streams were estimated at the sub-catchment level using US EPA Storm Water Management Model (SWMM)



Current and Future Land Use



Current (2021)

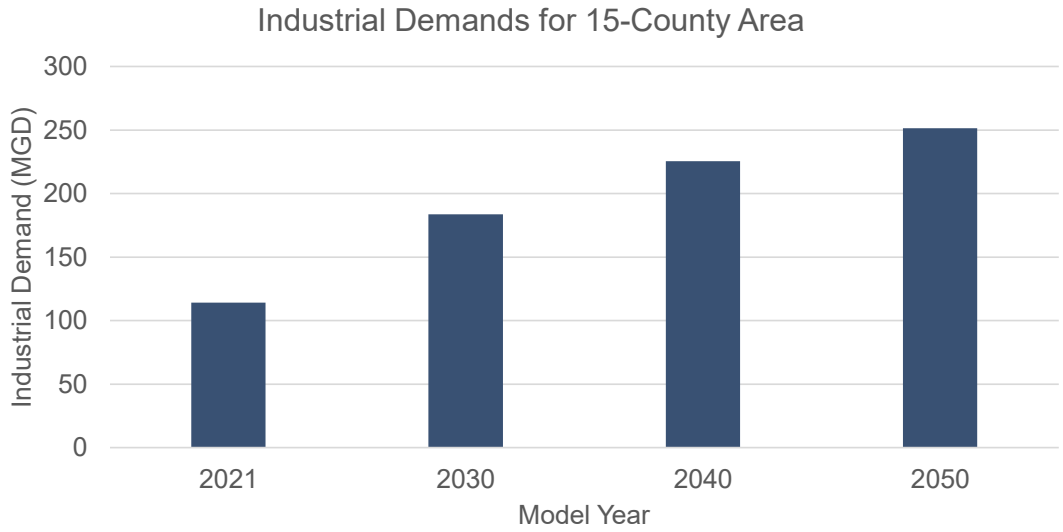


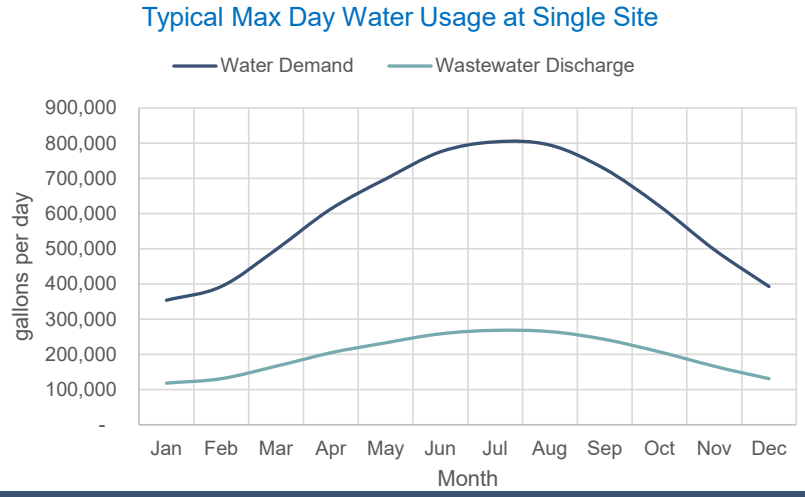
Future (2050)

Industrial Cooling Demands

- Demand for data storage and processing and artificial intelligence is driving the need for additional cooling water
- Industrial demands are estimated to increase by approximately 120% across the region from 2021 to 2050
- Industrial cooling demands were assigned to specific utility providers based on approximate locations and any known agreements

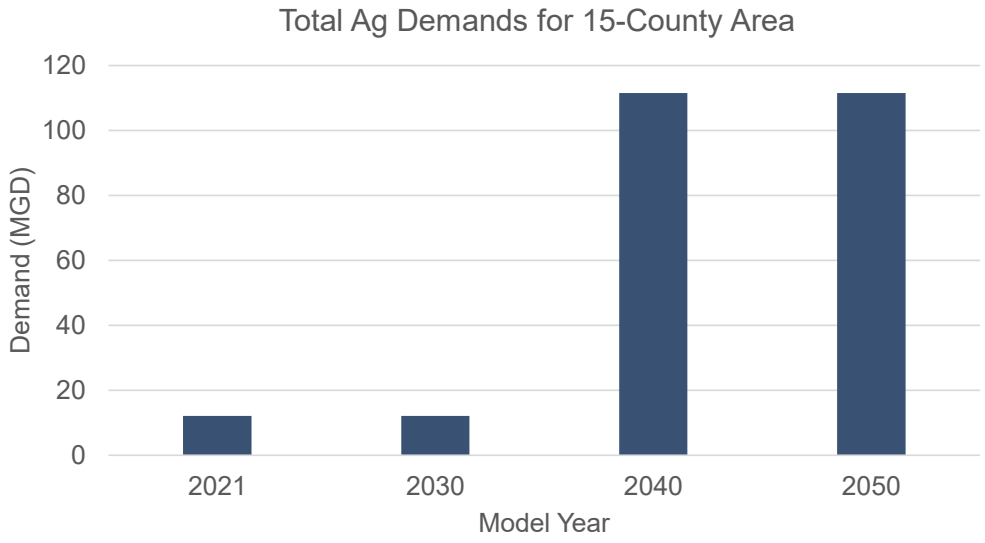
Max Monthly Demands (MGD) per Site			
	2030 (50 Acre Site)	**2040 (80 Acre Site)**	**2050 (100 Acre Site)**
Water Demand	0.80	1.29	1.61
Wastewater Demand	0.27	0.43	0.54



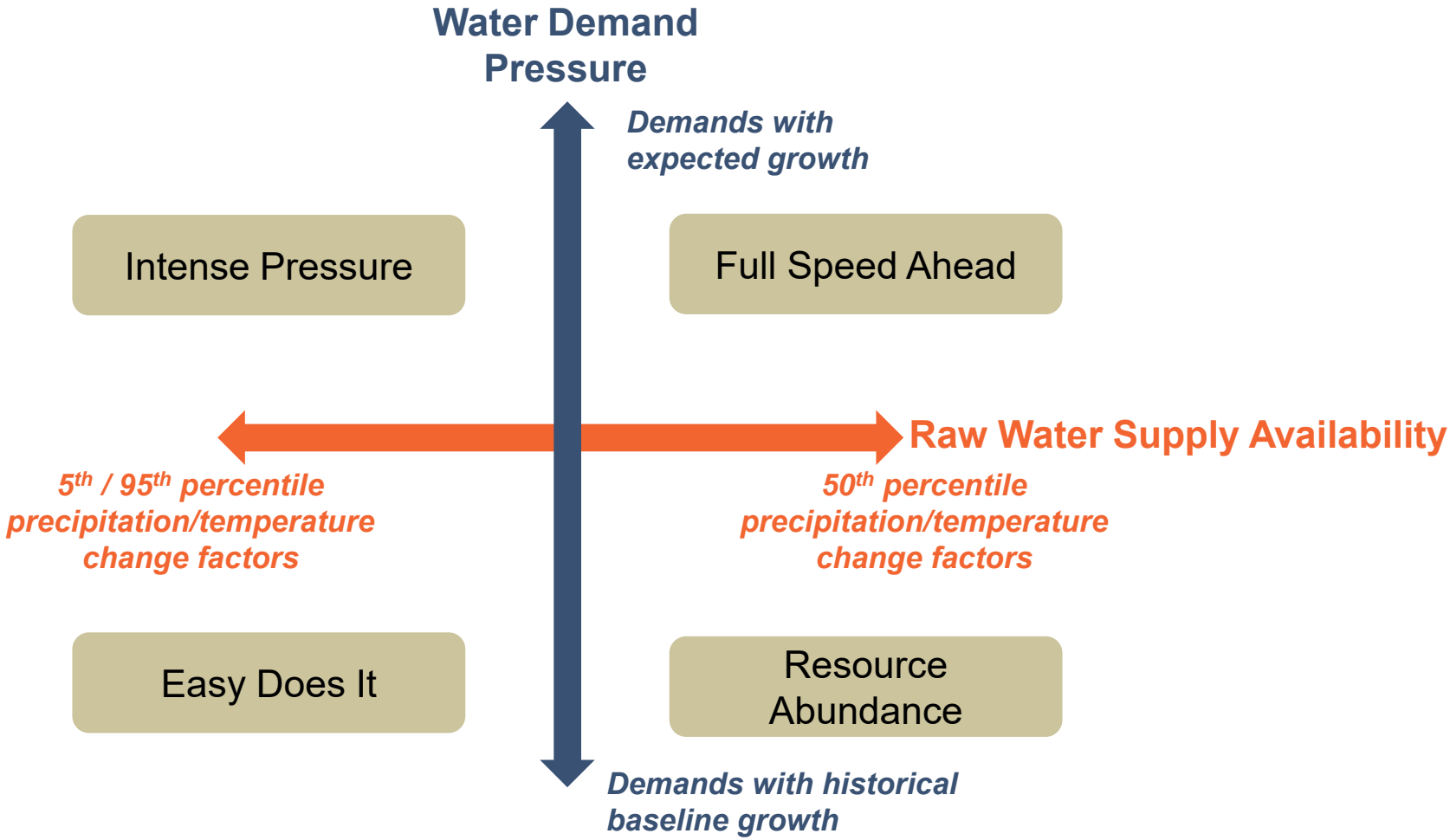


Agricultural Irrigation Demands

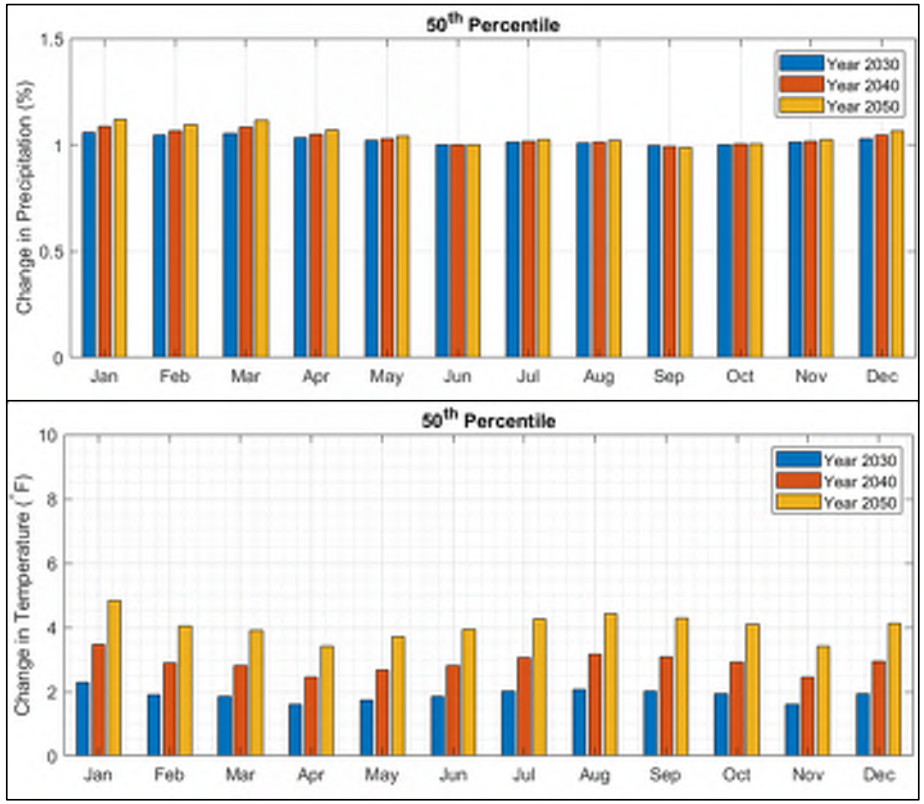
- By 2040 irrigation will be more widespread, driven by increasing temperatures
- Supplied by groundwater, during the critical growing season (July / August / September)
- Agricultural demands increase from approximately 12 MGD in the base year and 2030 to 110 MGD for 2040 and 2050 across the region during the July through September growing season



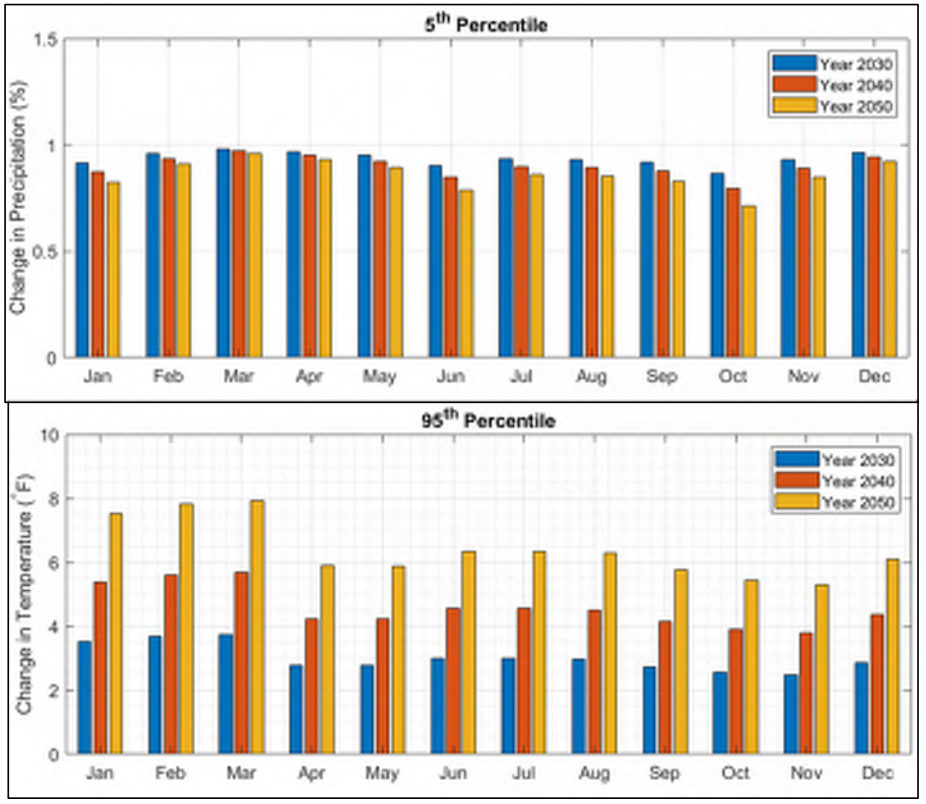
Model Scenarios



Raw Water Supply Availability Informed by Two Temperature/Precipitation Projections

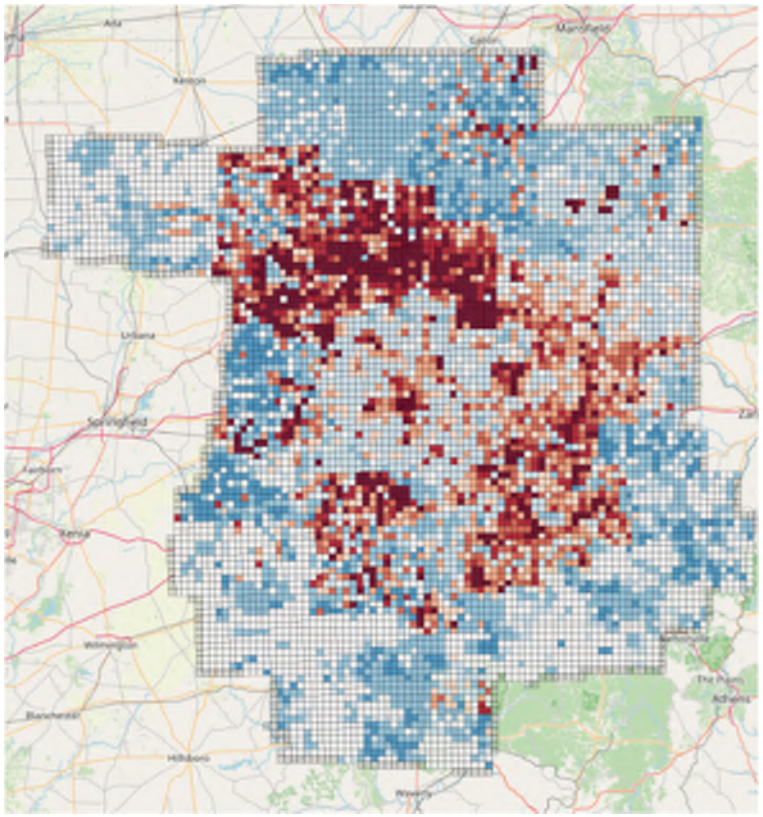


Moderate Change (50th Percentile Temperature and Precipitation)

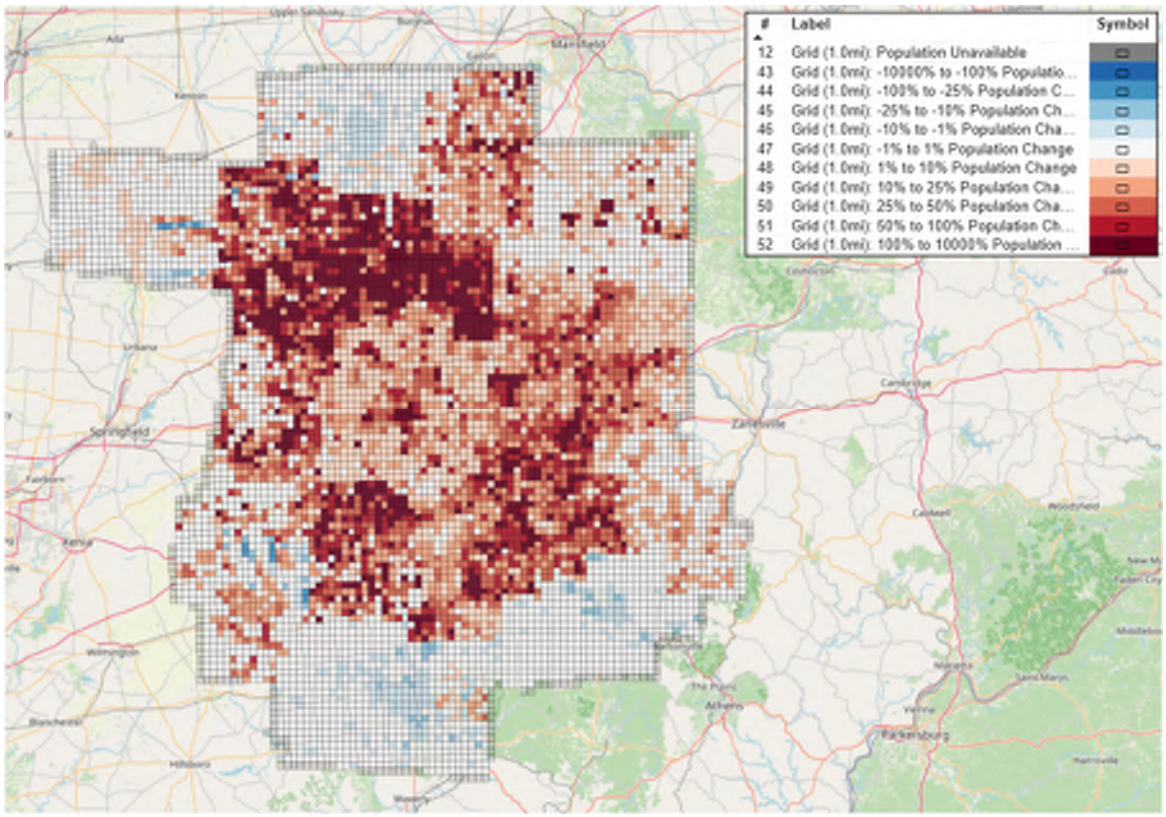


Extreme Change (5th Percentile Precipitation and 95th Percentile Temperature)

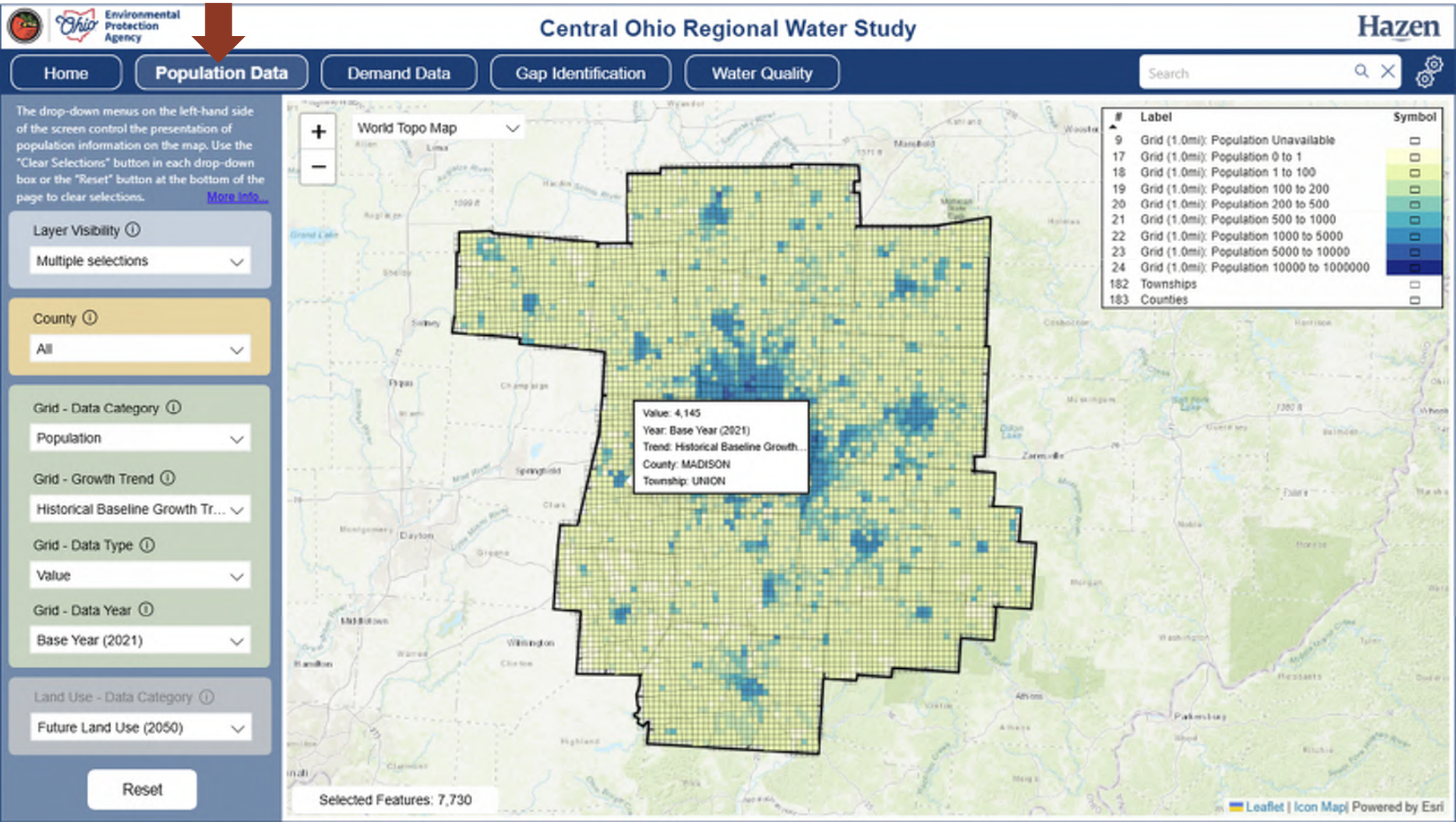
Percent Population Growth (2021 to 2050)



Historical Growth Trend (ODOD)



Expected Growth Trend (MORPC)


Ohio Environmental Protection Agency
Central Ohio Regional Water Study
Hazen
Home
Population Data
Demand Data
Gap Identification
Water Quality
Search
The drop-down menus on the left-hand side of the screen control the presentation of population information on the map. Use the "Clear Selections" button in each drop-down box or the "Reset" button at the bottom of the page to clear selections.
More Info...
Layer Visibility
Multiple selections
County
All
Grid - Data Category
Population
Grid - Growth Trend
Historical Baseline Growth Tr...
Grid - Data Type
Value
Grid - Data Year
Base Year (2021)
Land Use - Data Category
Future Land Use (2050)
Reset
World Topo Map
Value: 4,145
Year: Base Year (2021)
Trend: Historical Baseline Growth...
County: MADISON
Township: UNION
Label Symbol
9 Grid (1.0mi): Population Unavailable
17 Grid (1.0mi): Population 0 to 1
18 Grid (1.0mi): Population 1 to 100
19 Grid (1.0mi): Population 100 to 200
20 Grid (1.0mi): Population 200 to 500
21 Grid (1.0mi): Population 500 to 1000
22 Grid (1.0mi): Population 1000 to 5000
23 Grid (1.0mi): Population 5000 to 10000
24 Grid (1.0mi): Population 10000 to 1000000
182 Townships
183 Counties
Selected Features: 7,730
Leaflet | Icon Map| Powered by Esri

Ohio Environmental Protection Agency

Central Ohio Regional Water Study

Hazen

Home | Population Data | **Demand Data** | Gap Identification | Water Quality

Search

The drop-down menus on the left-hand side of the screen control the presentation of water demand data on the map. Use the "Clear Selections" button in each drop-down box or the "Reset" button at the bottom of the page to clear selections. More Info...

Layer Visibility
Multiple selections

Demand Node Visibility
All

County
All

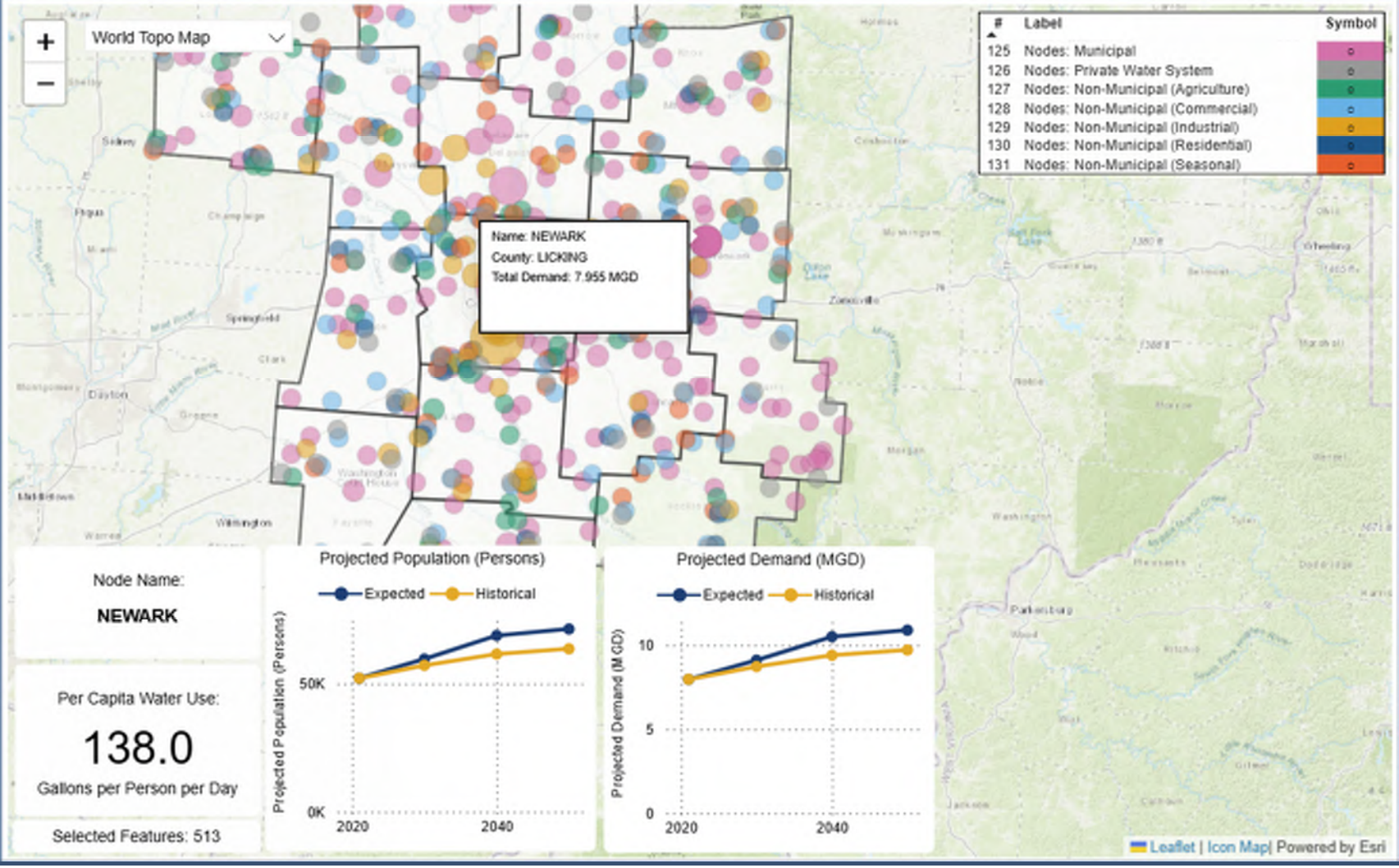
Nodes - Population Trend
Historical Baseline Growth Tr...

Nodes - Value Type
Total Demand

Nodes - Value Year
Base Year (2021)

Nodes - Scale Per Capita Use
0.00%

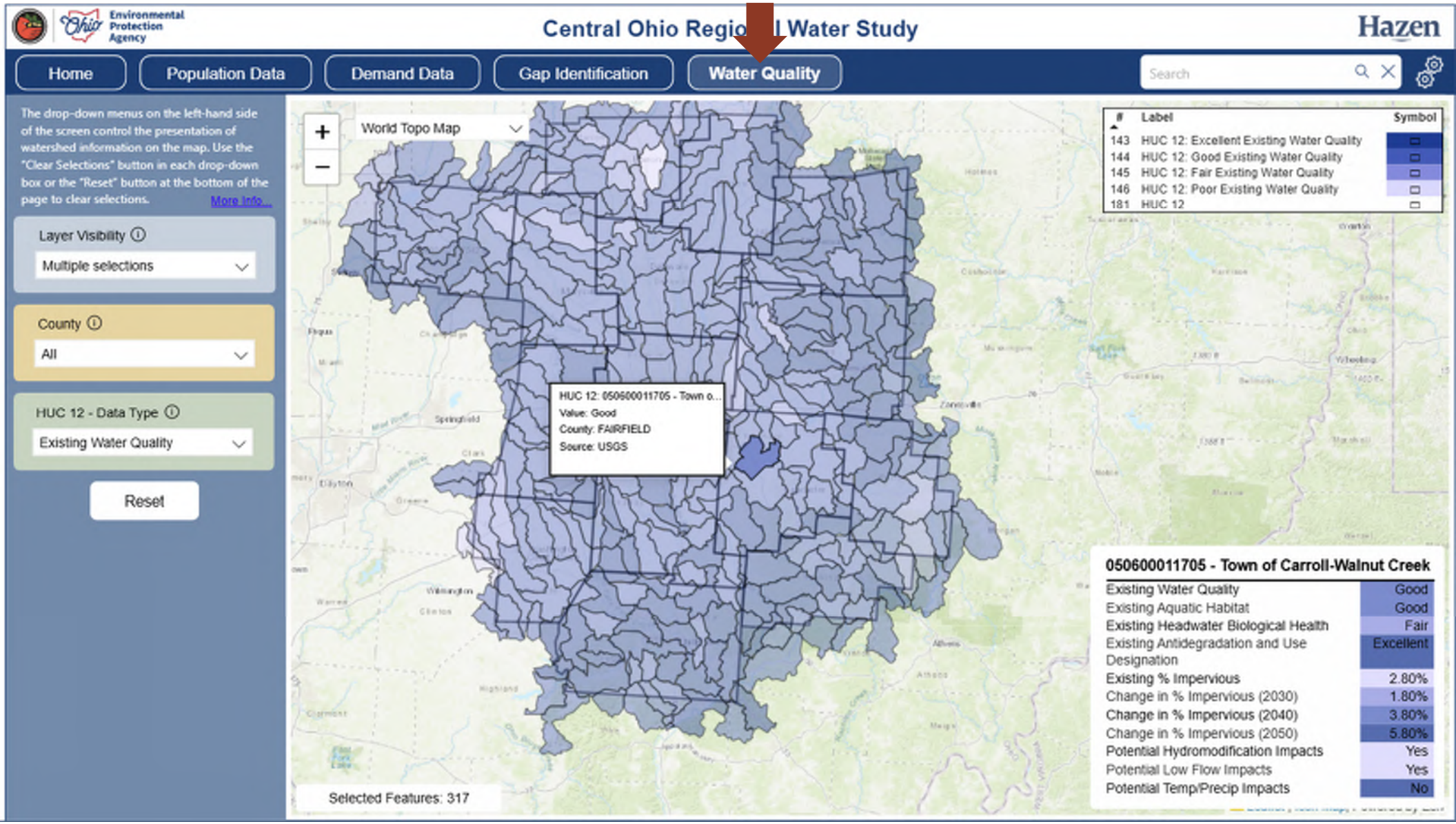
Reset



Node Name:
NEWARK

Per Capita Water Use:
138.0
Gallons per Person per Day

Selected Features: 513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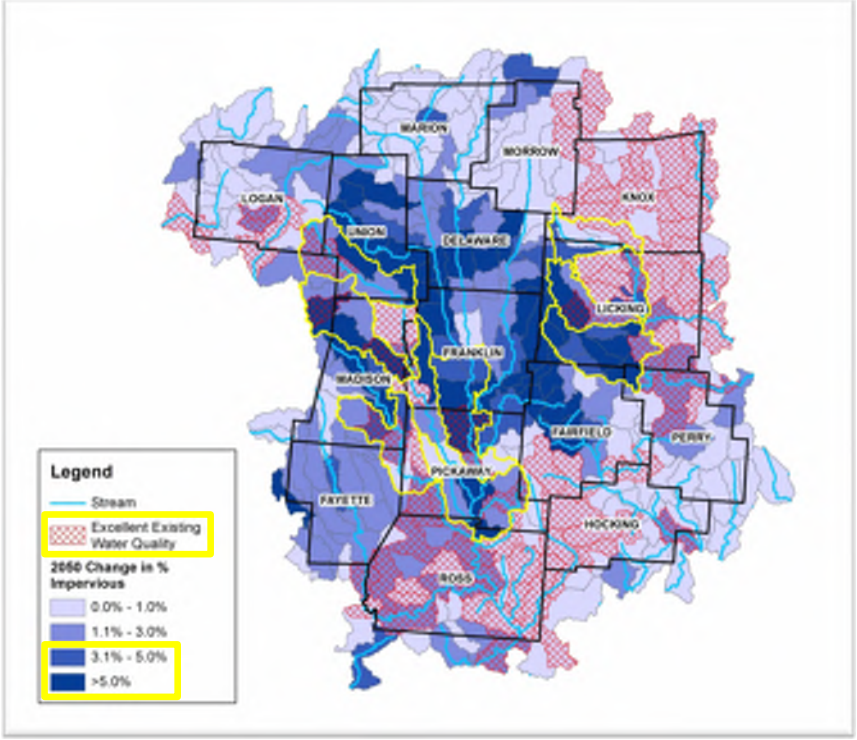
Population Data
Demand Data
Gap Identification
Water Quality
Search
The drop-down menus on the left-hand side of the screen control the presentation of watershed information on the map. Use the "Clear Selections" button in each drop-down box or the "Reset" button at the bottom of the page to clear selections.
More Info...
Layer Visibility
Multiple selections
County
All
HUC 12 - Data Type
Existing Water Quality
Reset
World Topo Map
HUC 12: 050600011705 - Town o...
Value: Good
County: FAIRFIELD
Source: USGS
Label Symbol
143 HUC 12: Excellent Existing Water Quality
144 HUC 12: Good Existing Water Quality
145 HUC 12: Fair Existing Water Quality
146 HUC 12: Poor Existing Water Quality
181 HUC 12
050600011705 - Town of Carroll-Walnut Creek
Existing Water Quality Good
Existing Aquatic Habitat Good
Existing Headwater Biological Health Fair
Existing Antidegradation and Use Designation Excellent
Existing % Impervious 2.80%
Change in % Impervious (2030) 1.80%
Change in % Impervious (2040) 3.80%
Change in % Impervious (2050) 5.80%
Potential Hydromodification Impacts Yes
Potential Low Flow Impacts Yes
Potential Temp/Precip Impacts No
Selected Features: 317

Water Quality Protection

Watersheds containing excellent existing water quality AND a relatively high change in impervious area in 2050 are:

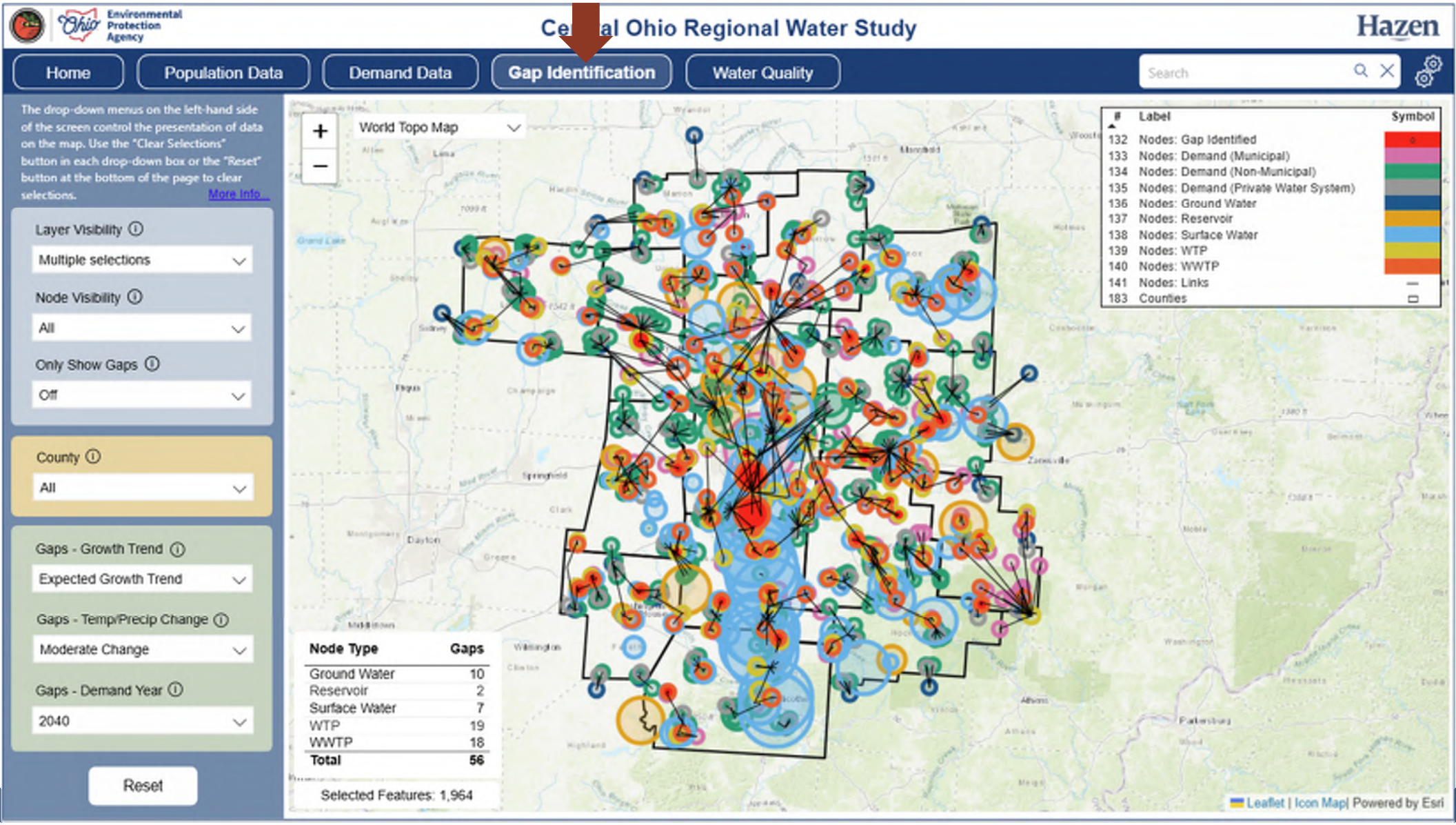


Policy

Partnerships

Data

Funding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Water Quality
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More Info...
Layer Visibility
Multiple selections
Node Visibility
All
Only Show Gaps
Off
County
All
Gaps - Growth Trend
Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2040
Reset
World Topo Map
Label Symbol
132 Nodes: Gap Identified
133 Nodes: Demand (Municipal)
134 Nodes: Demand (Non-Municipal)
135 Nodes: Demand (Private Water System)
136 Nodes: Ground Water
137 Nodes: Reservoir
138 Nodes: Surface Water
139 Nodes: WTP
140 Nodes: WWTP
141 Nodes: Links
183 Counties
Node Type Gaps
Ground Water 10
Reservoir 2
Surface Water 7
WTP 19
WWTP 18
Total 56
Selected Features: 1,964
Leaflet | Icon Map| Powered by Esri

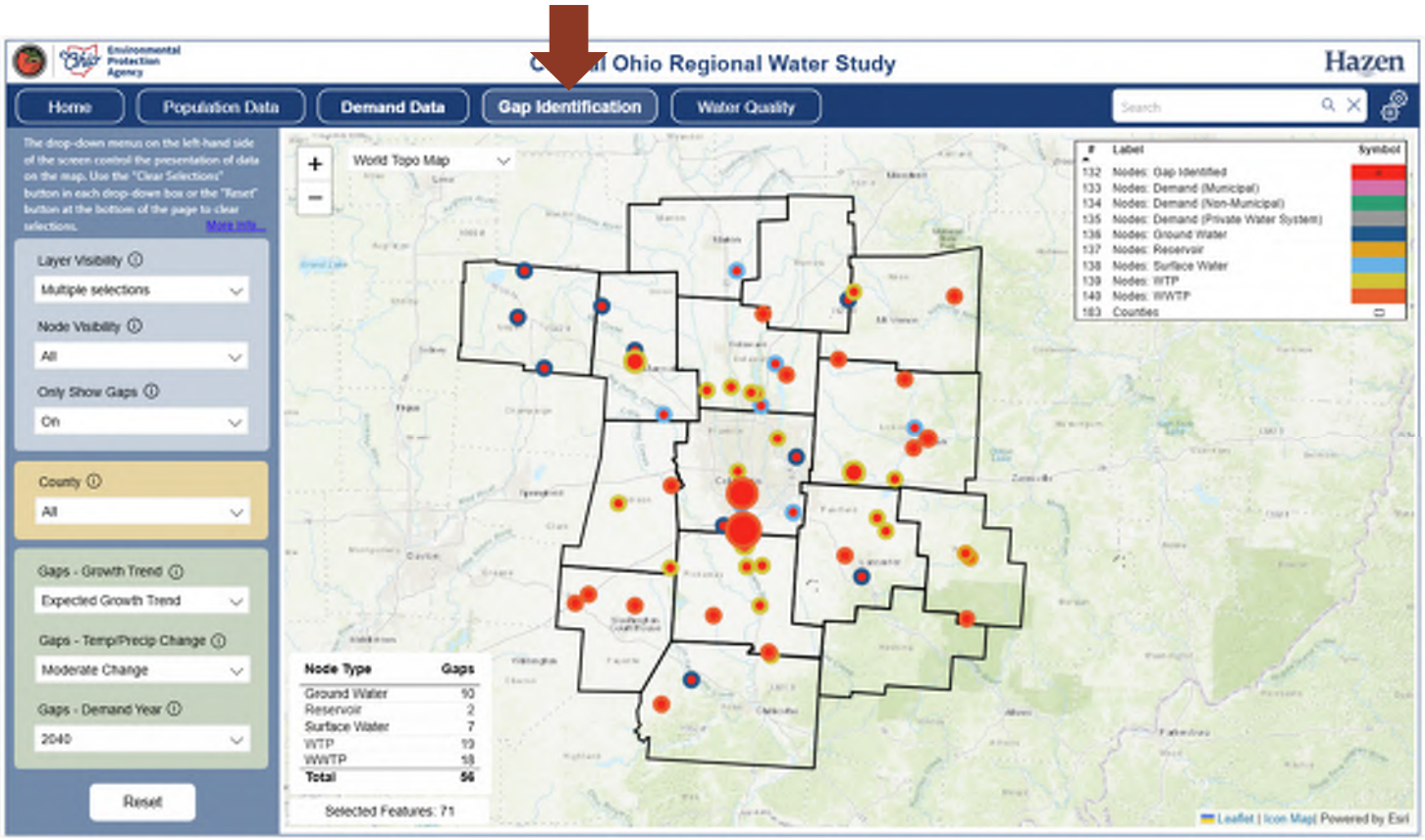
Resource Gaps - Definitions

Gaps are defined based on the node type:

- **Surface water – if any shortage is observed throughout the simulation period**
- **Reservoir – if usable storage ever reaches 20% or lower**
- **Ground water – if remaining ground water ever reaches zero**
- **Water treatment plant – if the max month average flow reaches 80% or more of the permitted capacity**
- **Wastewater treatment plant – if the max annual average flow reaches 100% or more of the permitted capacity**

In the dashboard, red-filled nodes represent gaps for the selected conditions on the left

Node sizing reflects the magnitude of the identified gap



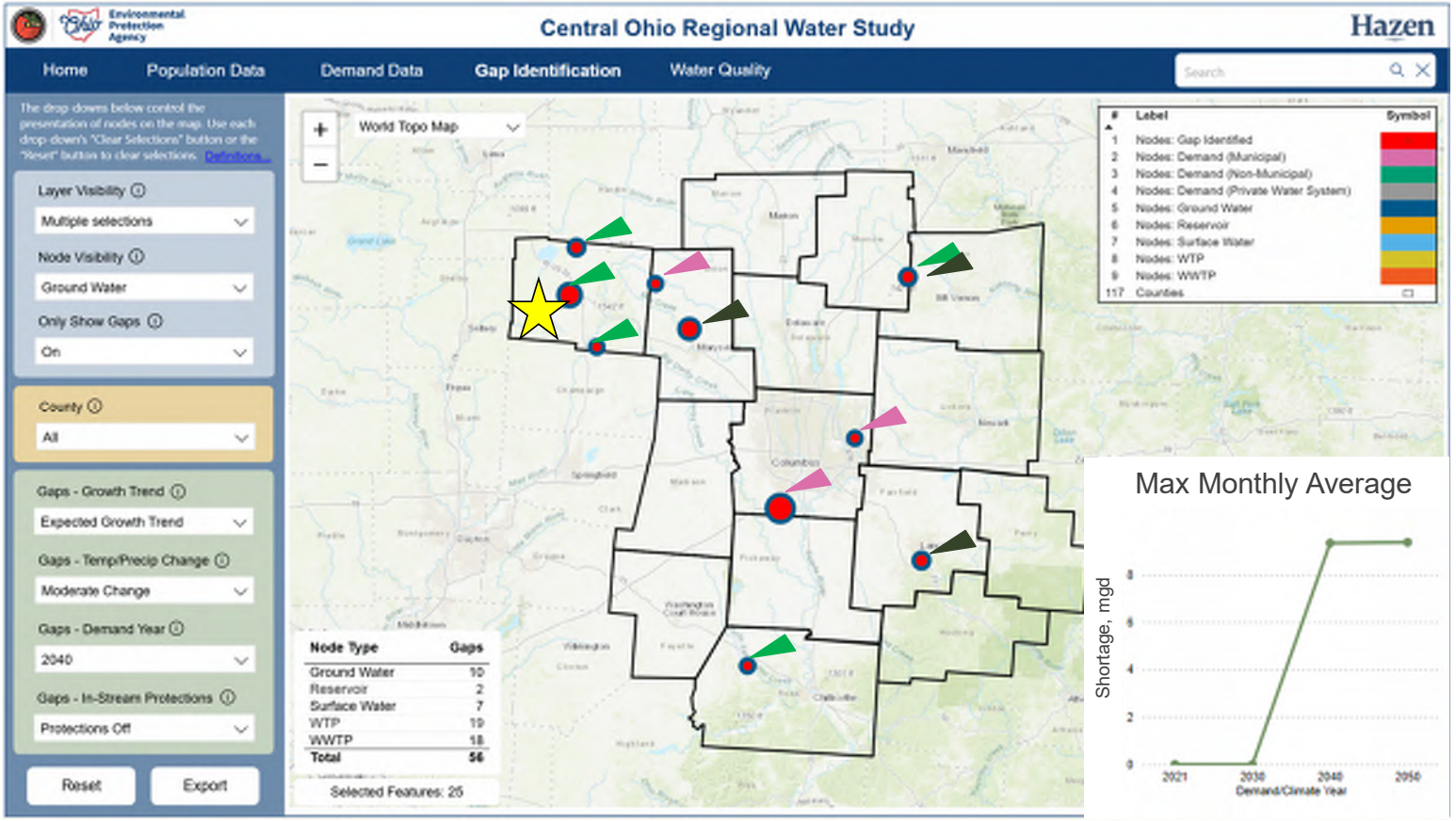
Resource Gaps - Summary

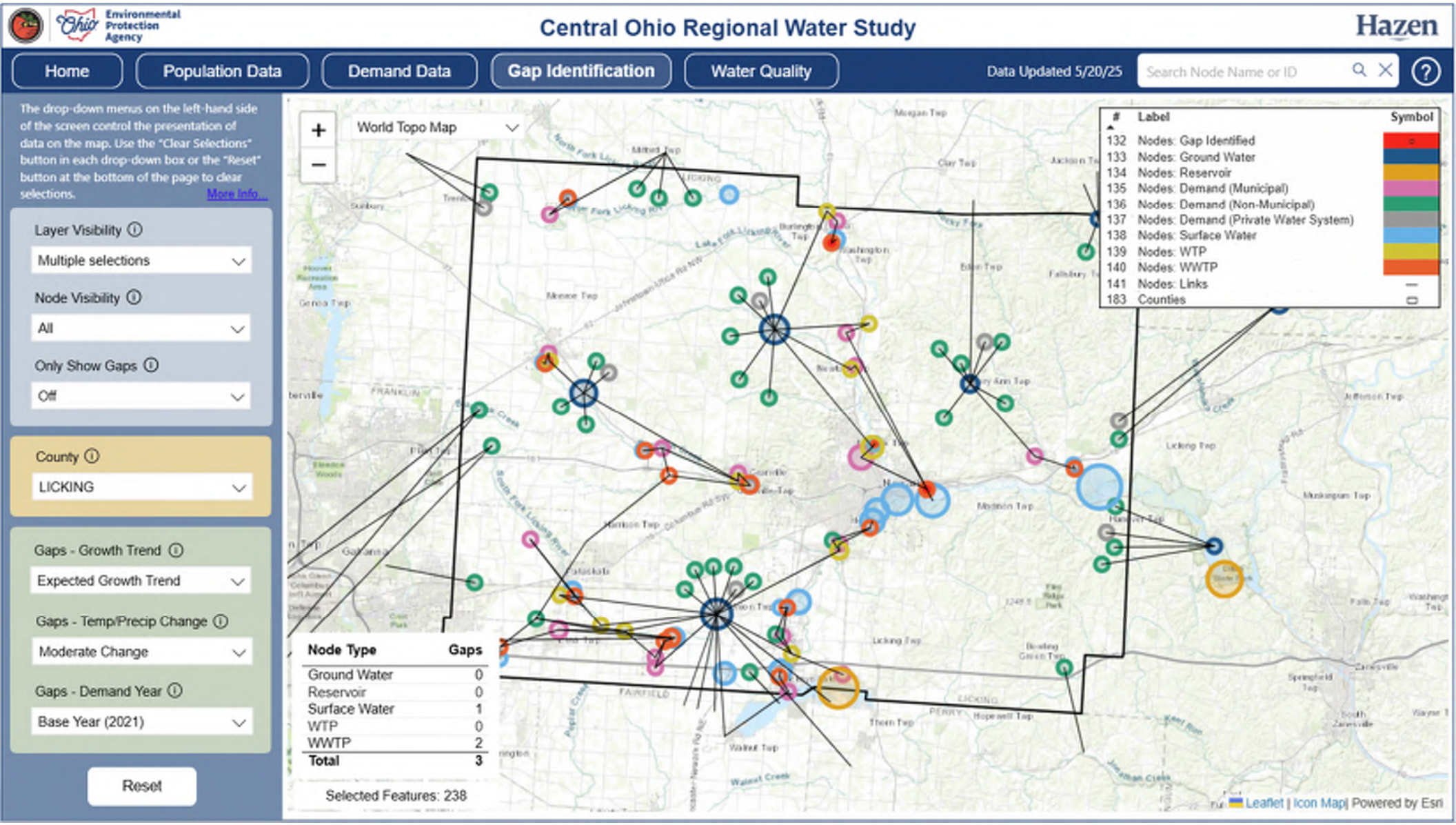
Full Summary of Gaps – 15 Counties

Scenario		GW	Reservoir	SW	WTP	WWTP	Total
Base Year		2	2	7	7	13	31
Intense Pressure *(expected growth + high temperature/precipitation stress)*	2030	4	2	7	10	16	39
	2040	10	3	7	19	17	56
	2050	10	5	7	22	20	64
Full Speed Ahead *(expected growth + moderate temperature/precipitation stress)*	2030	4	2	7	10	16	39
	2040	10	2	7	19	18	56
	2050	10	2	7	22	21	62
Easy Does It *(historical growth + high temperature/precipitation stress)*	2030	4	2	7	10	14	37
	2040	9	2	7	14	15	47
	2050	9	4	6	16	14	49
Resource Abundance *(historical growth + moderate temperature/precipitation stress)*	2030	4	2	7	10	14	37
	2040	9	1	7	14	15	46
	2050	9	1	7	16	16	49

Resource Gaps – Ground Water Supplies

- Gap = Ground water supplies that reach zero in the simulation period
- 10 gaps in total
  - Agricultural driver – 5
  - Industrial driver – 3
  - Municipal driver – 3
  - *One gap overlaps agriculture and industry*
- Drivers are presented in the overall 15-County Report Out

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Home
Population Data
Demand Data
Gap Identification
Water Quality
Data Updated 5/20/25
Search Node Name or ID
The drop-down menus on the left-hand side of the screen control the presentation of data on the map. Use the "Clear Selections" button in each drop-down box or the "Reset" button at the bottom of the page to clear selections.
More Info...
Layer Visibility
Multiple selections
Node Visibility
All
Only Show Gaps
Off
County
LICKING
Gaps - Growth Trend
Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
Base Year (2021)
Reset
World Topo Map
Label Symbol
132 Nodes: Gap Identified
133 Nodes: Ground Water
134 Nodes: Reservoir
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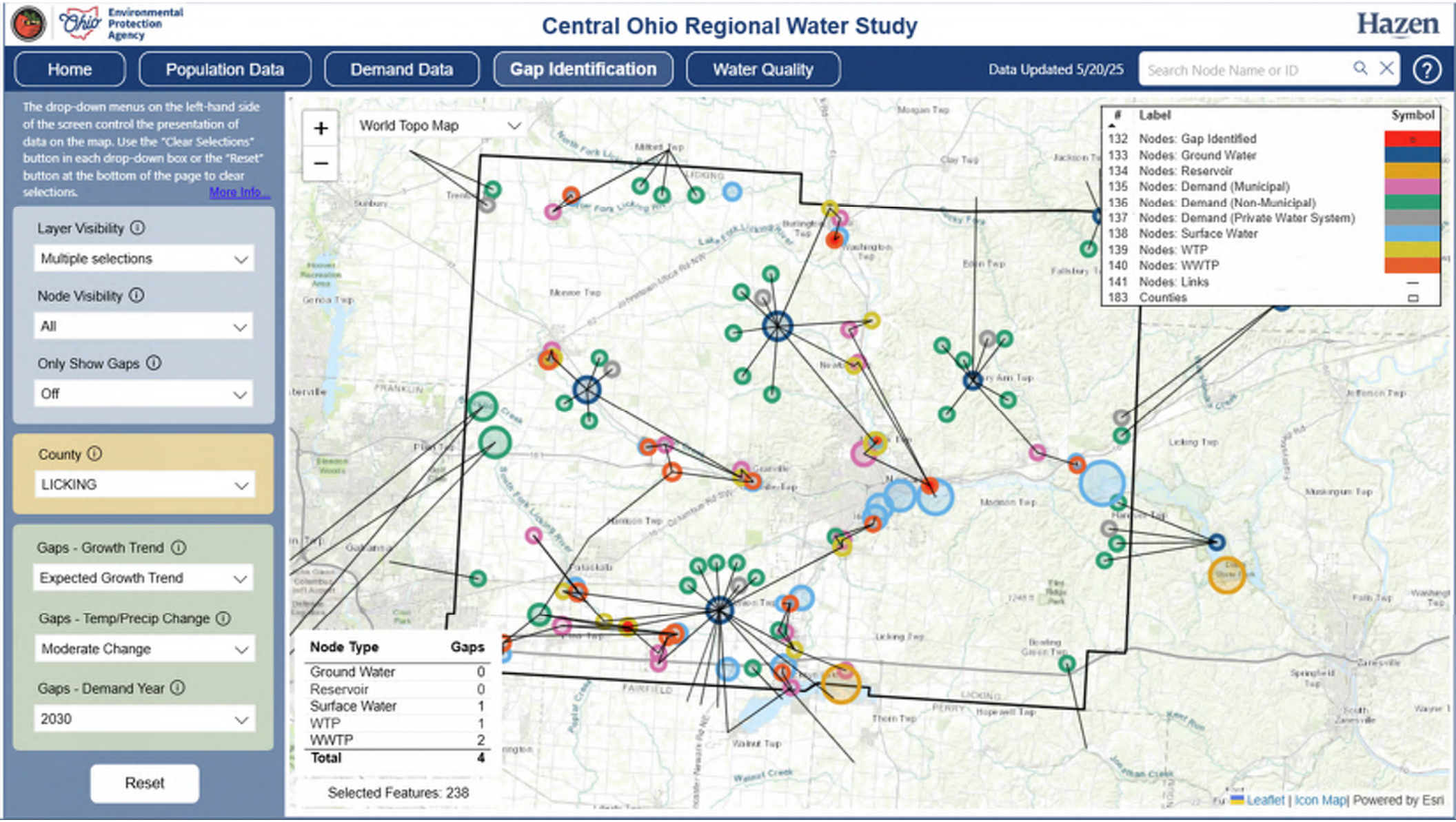
136 Nodes: Demand (Non-Municipal)
137 Nodes: Demand (Private Water System)
138 Nodes: Surface Water
139 Nodes: WTP
140 Nodes: WWTP
141 Nodes: Links
183 Counties
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 0
WWTP 2
Total 3
Selected Features: 238
Leaflet | Icon Map| Powered by Esri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Node Visibility
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Off
County
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Gaps - Growth Trend
Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2030
Reset
World Topo Map
Label Symbol
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183 Counties
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 1
WWTP 2
Total 4
Selected Features: 238
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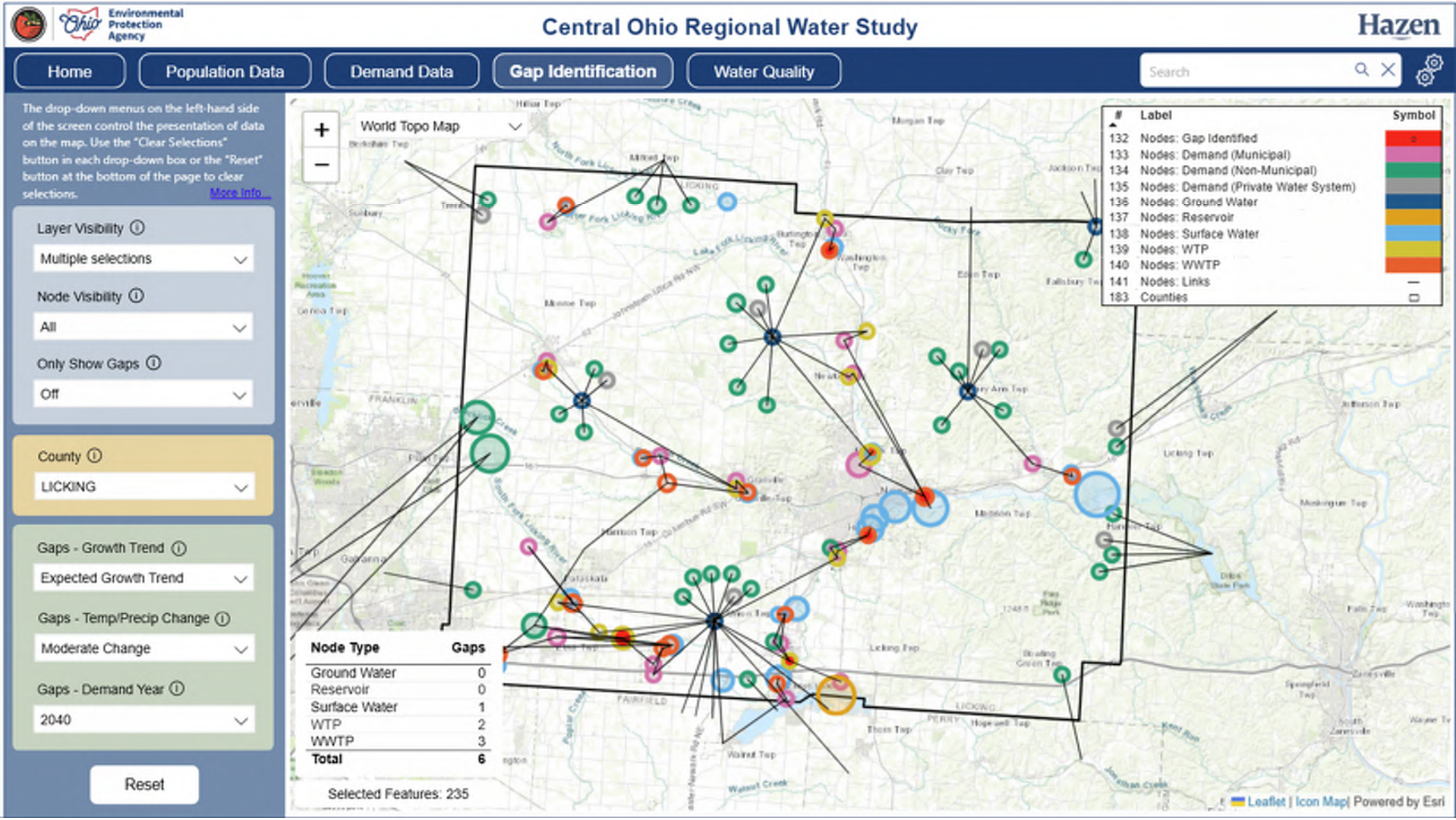
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Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2040
Reset
World Topo Map
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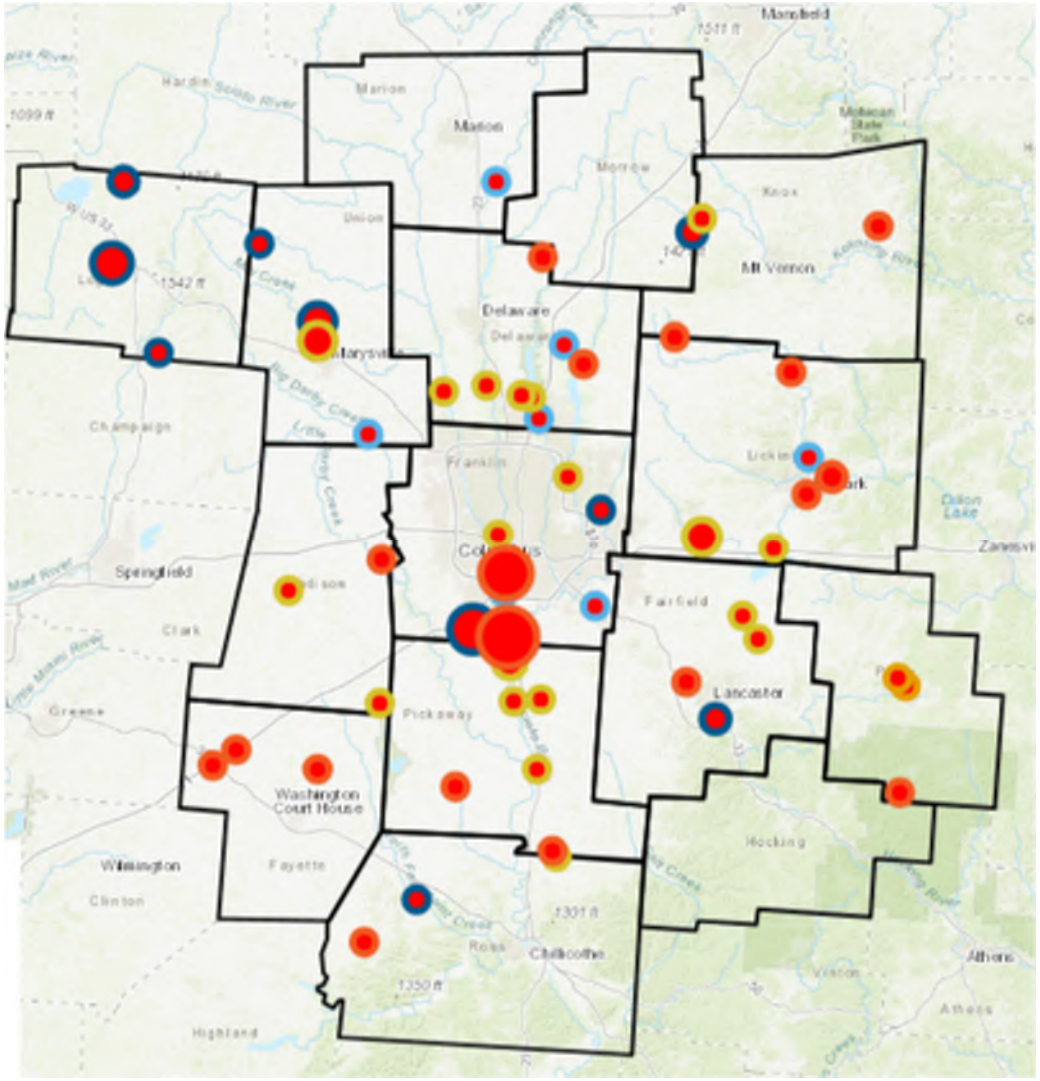
140 Nodes: WWTP
141 Nodes: Links
183 Counties
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 2
WWTP 3
Total 6
Selected Features: 235
Leaflet | Icon Map| Powered by Esri

Each County Report Out Includes

2040 Full Speed Ahead Scenario

- County data analysis including model demands
- Discussion of gaps identified
- Identification of areas of opportunity
- Detailed project options – LOCAL, REGIONAL, REUSE
  - Local – Utility largely uses its own assets to fill gap or industrial provides its own onsite solutions
  - Regional – Utility collaborates with other utilities
  - Reuse – Utility leverages reuse water to provide non-potable water to an industrial user to reduce potable water demand
  - Cost models for comparative purposes and are in 2024 costs
- Water quality analysis



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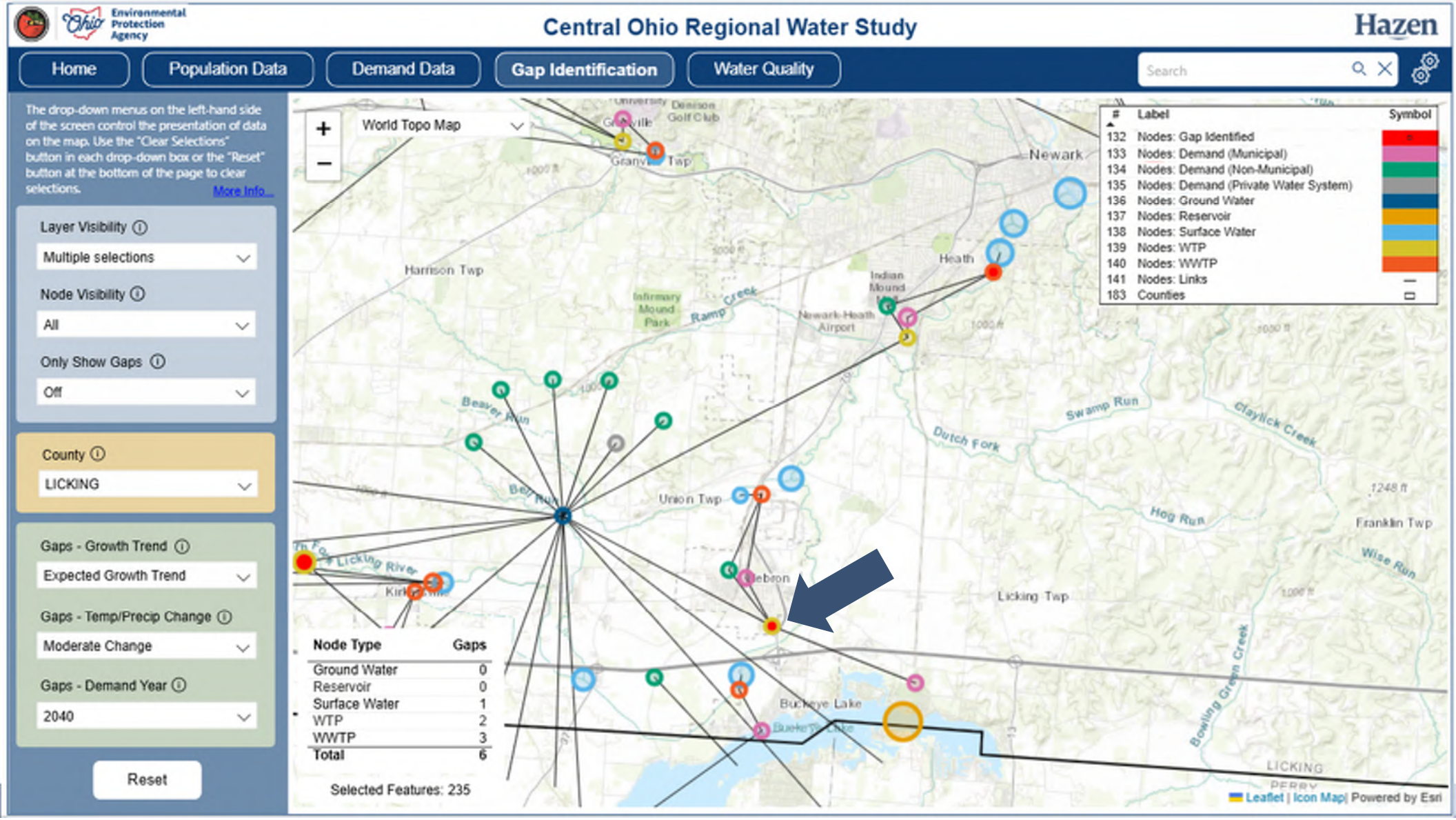
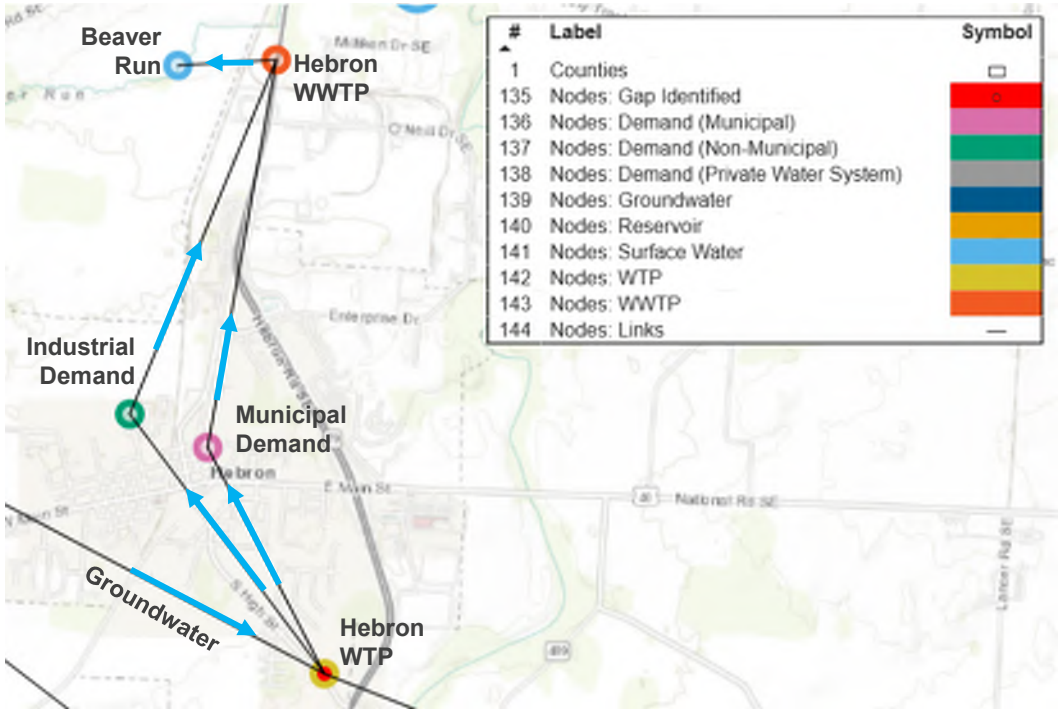
	2040	10	2	7	19	18	56
	2050	10	2	7	22	21	62
Easy Does It *(historical growth + high temperature/precipitation stress)*	2030	4	2	7	10	14	37
	2040	9	2	7	14	15	47
	2050	9	4	6	16	14	49
Resource Abundance *(historical growth + moderate temperature/precipitation stress)*	2030	4	2	7	10	14	37
	2040	9	1	7	14	15	46
	2050	9	1	7	16	16	49

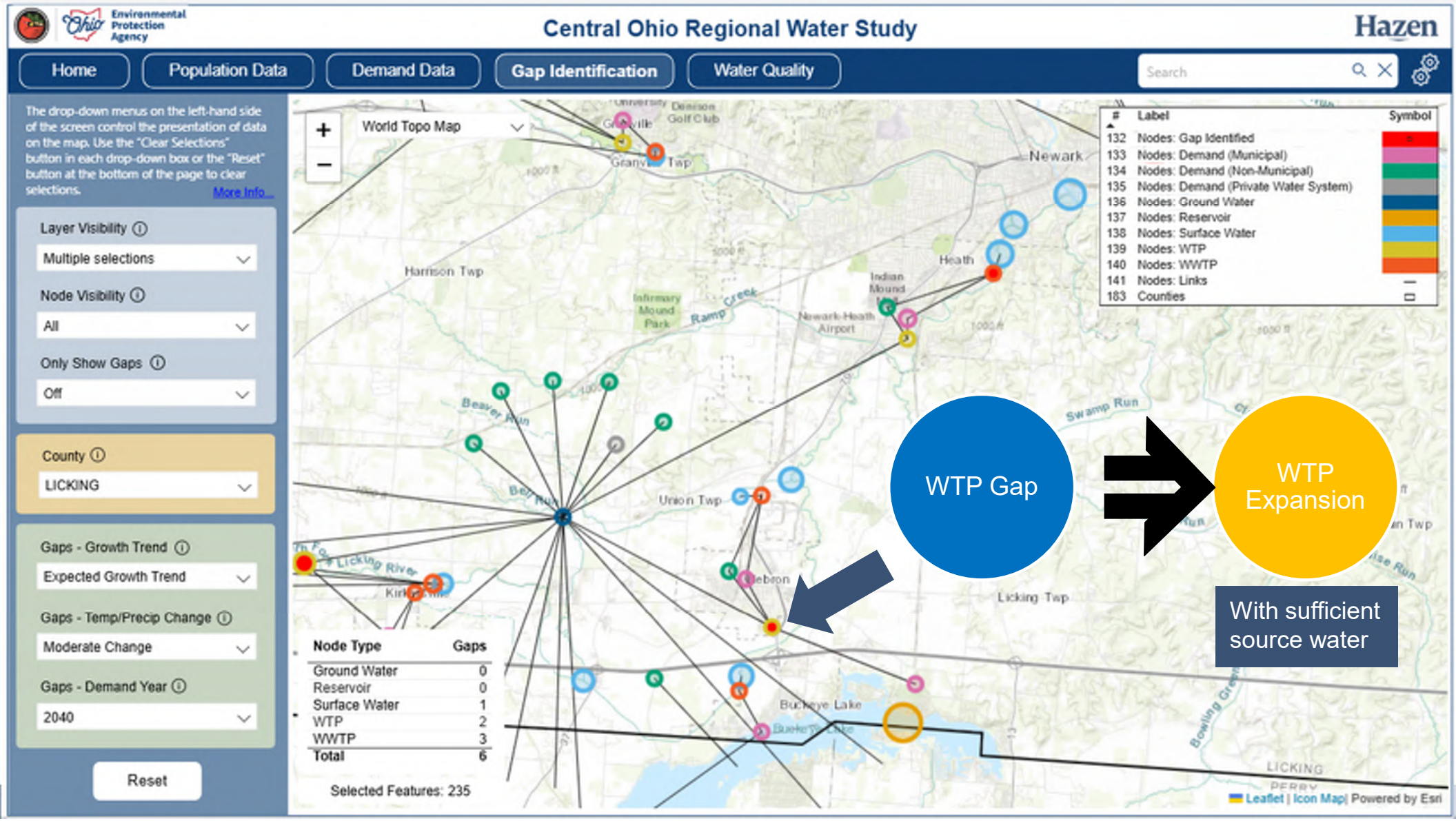

Ohio Environmental Protection Agency
Central Ohio Regional Water Study
Hazen
Home
Population Data
Demand Data
Gap Identification
Water Quality
Search
The drop-down menus on the left-hand side of the screen control the presentation of data on the map. Use the "Clear Selections" button in each drop-down box or the "Reset" button at the bottom of the page to clear selections.
More Info...
Layer Visibility
Multiple selections
Node Visibility
All
Only Show Gaps
Off
County
LICKING
Gaps - Growth Trend
Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2040
Reset
World Topo Map
Label Symbol
132 Nodes: Gap Identified
133 Nodes: Demand (Municipal)
134 Nodes: Demand (Non-Municipal)
135 Nodes: Demand (Private Water System)
136 Nodes: Ground Water
137 Nodes: Reservoir
138 Nodes: Surface Water
139 Nodes: WTP
140 Nodes: WWTP
141 Nodes: Links
183 Counties
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 2
WWTP 3
Total 6
Selected Features: 235
Newark
Heath
Harrison Twp
Granville Twp
Union Twp
Licking Twp
Franklin Twp
Buckeye Lake
Hebron
Indian Mound
Newark-Heath Airport
Infirmary Mound Park
Ramp Creek
Beaver Run
Ben Run
Dutch Fork
Swamp Run
Claylick Creek
Hog Run
Wise Run
Bowling Green Creek
Licking River
LICKING
PERRY
Leaflet | Icon Map| Powered by Esri

Hebron Village WTP

Overview (2040 Full Speed Ahead Scenario)

- Industry and population growth WTP driven gap. The estimated demand and capacity are the same. Ohio EPA recommends an expansion at or near 80% of a treatment plant's capacity.
- Local upgrade, reuse, and regional connections are potential solutions

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County
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Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2040
Reset
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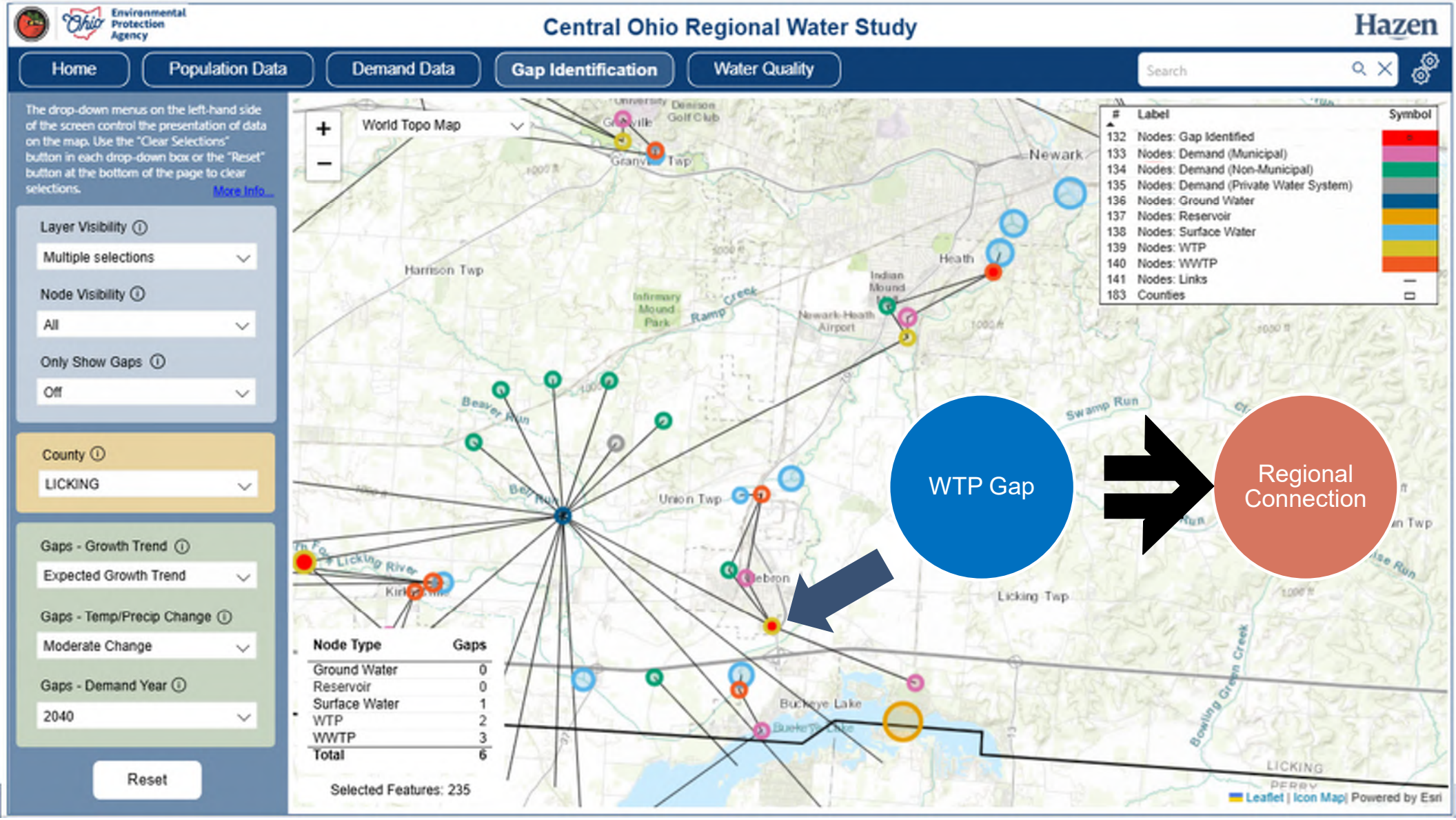
138 Nodes: Surface Water
139 Nodes: WTP
140 Nodes: WWTP
141 Nodes: Links
183 Counties
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 2
WWTP 3
Total 6
Selected Features: 235
WTP Gap
WTP Expansion
With sufficient source water
Newark
Granville
Harrison Twp
Heath
Indian Mound
Infirmary Mound Park
Ramp Creek
Newark-Heath Airport
Beaver Run
Swamp Run
Union Twp
Licking River
Kirkersville
Hebron
Licking Twp
Buckeye Lake
Bowling Green
LICKING
PERRY
Leaflet | Icon Map| Powered by Esri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Off
County
LICKING
Gaps - Growth Trend
Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2040
Reset
World Topo Map
Label Symbol
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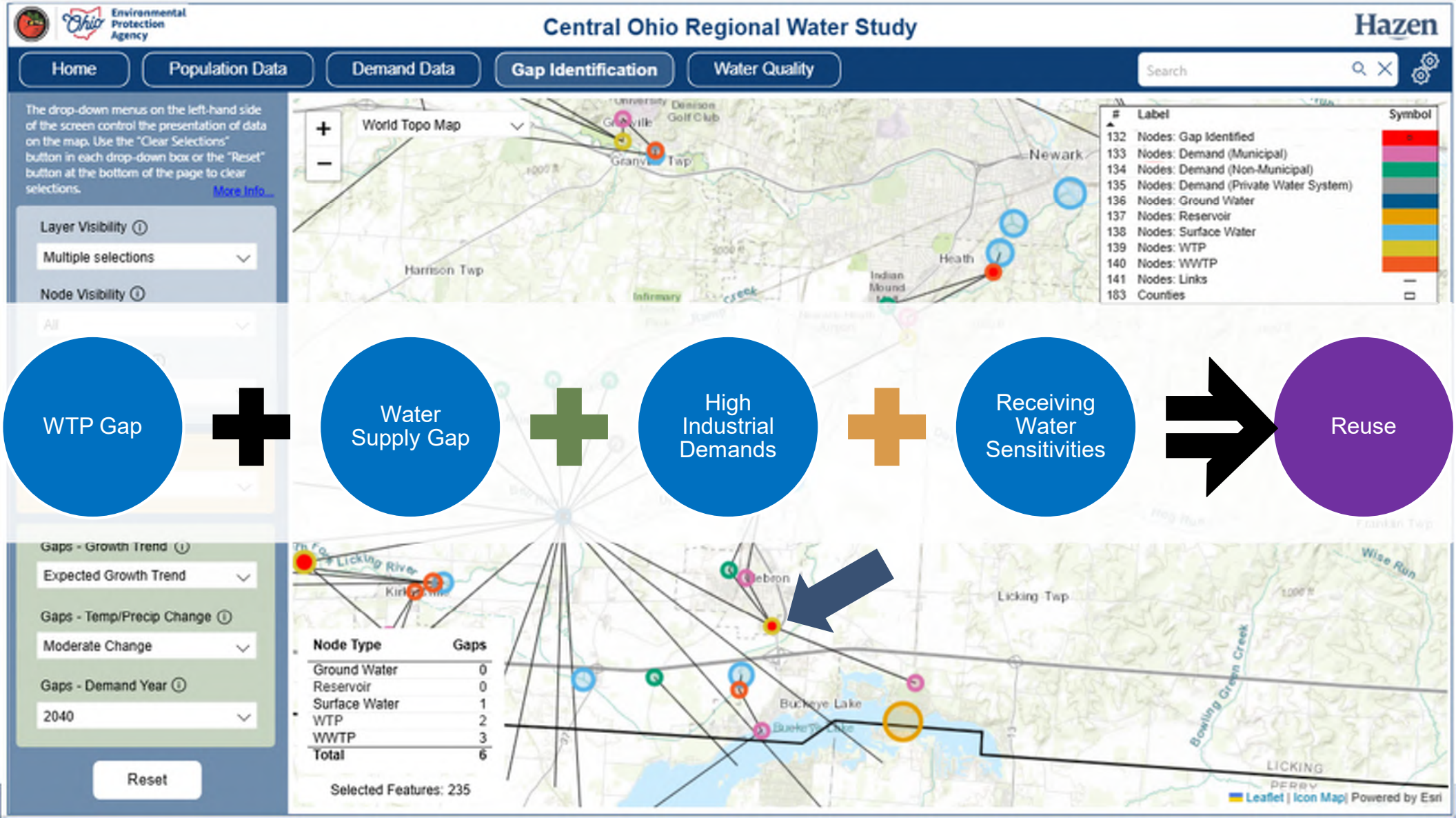
139 Nodes: WTP
140 Nodes: WWTP
141 Nodes: Links
183 Counties
WTP Gap
Regional Connection
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 2
WWTP 3
Total 6
Selected Features: 235
Newark
Granville
Harrison Twp
Heath
Union Twp
Licking Twp
Buckeye Lake
Leaflet | Icon Map| Powered by Esri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141 Nodes: Links
183 Counties
WTP Gap
Water Supply Gap
High Industrial Demands
Receiving Water Sensitivities
Reuse
Gaps - Growth Trend
Expected Growth Trend
Gaps - Temp/Precip Change
Moderate Change
Gaps - Demand Year
2040
Reset
Node Type Gaps
Ground Water 0
Reservoir 0
Surface Water 1
WTP 2
WWTP 3
Total 6
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Licking Township
Buckeye Lake
Leaflet | Icon Map| Powered by Esri

Hebron Village WTP

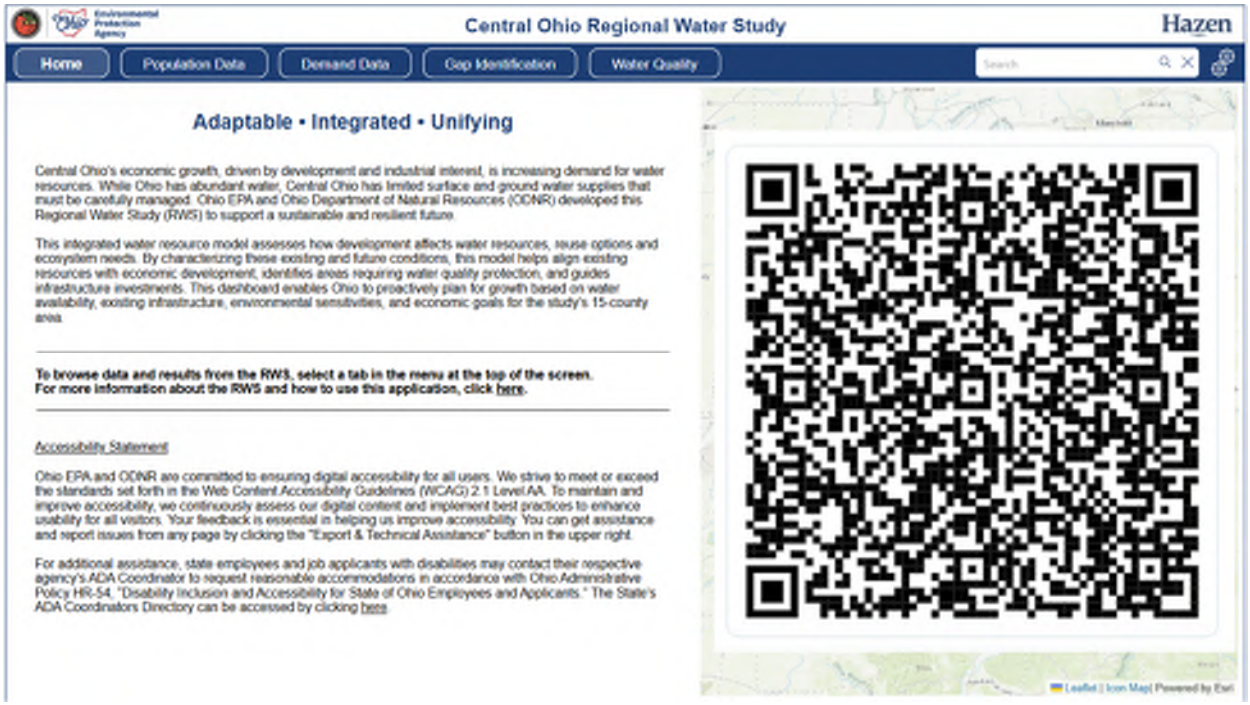
Overview (2040 Full Speed Ahead Scenario)

Project	WTP Need(s)	WWTP Need(s)	Outside Fence Need(s)	Total	O&M Relative Requirements
Expand WTP	0.5 MGD (Total Capacity, 2.66 MGD) $23,900,000	N/A	+ Distribution	$23,900,000	Low
Regional Interconnection (LRWD)	0.5 MGD Booster Pump Station $4,500,000	N/A	$6,600,000	$11,100,000	Medium
Upgrade WWTP for Reuse	N/A	Expand and add reuse to supply industrial demand. 2.66 MGD reuse $11,300,000	+ Conveyance	$11,300,000	Low

	Project Cost	Favorability Across Scenarios	Favorability Across Gaps	Life Cycle Cost	Water Quality Impact	Implementation Timeline
Option A – Expand Hebron WTP	$$	Green	Green	Green	Green	Yellow
Option B – Regional Interconnection(s)	$	Green	Green	Green	Green	Green
Option C – Expand and add reuse	$$	Green	Green	Green	Green	Green

Project Resources

- Dashboard Tutorial Videos
- 15-County Overall Presentation, with Recording
- County-Level Presentations, Including Recordings
- Technical Presentations
  - **Cost Curve**
  - **Water Quality**
  - **OASIS Modeling**
  - **SWMM Modeling**

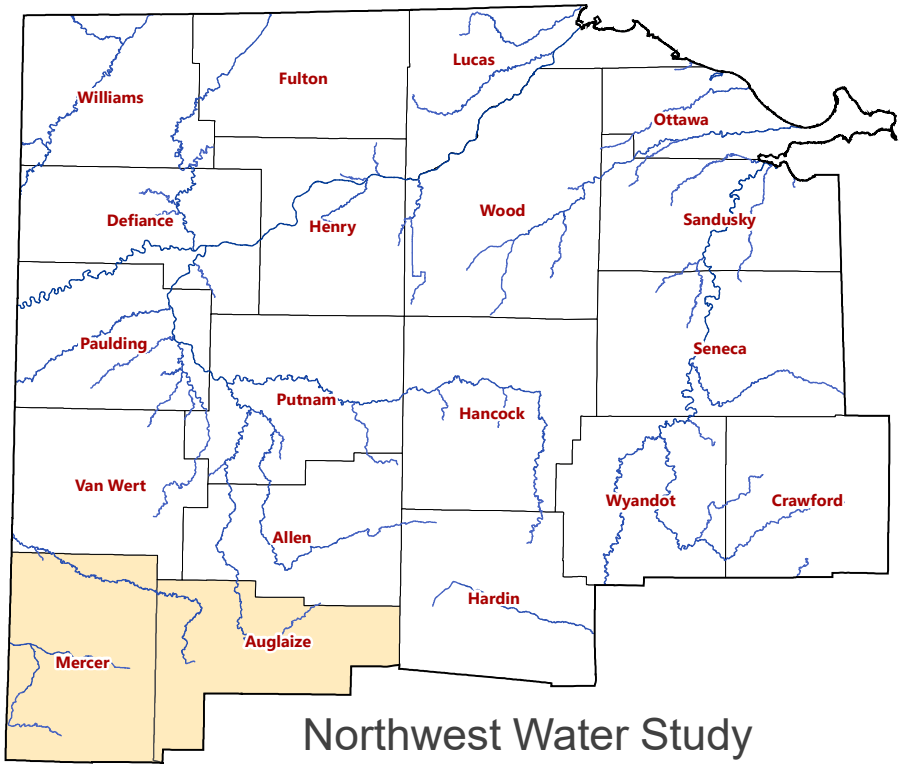


Future Water Studies

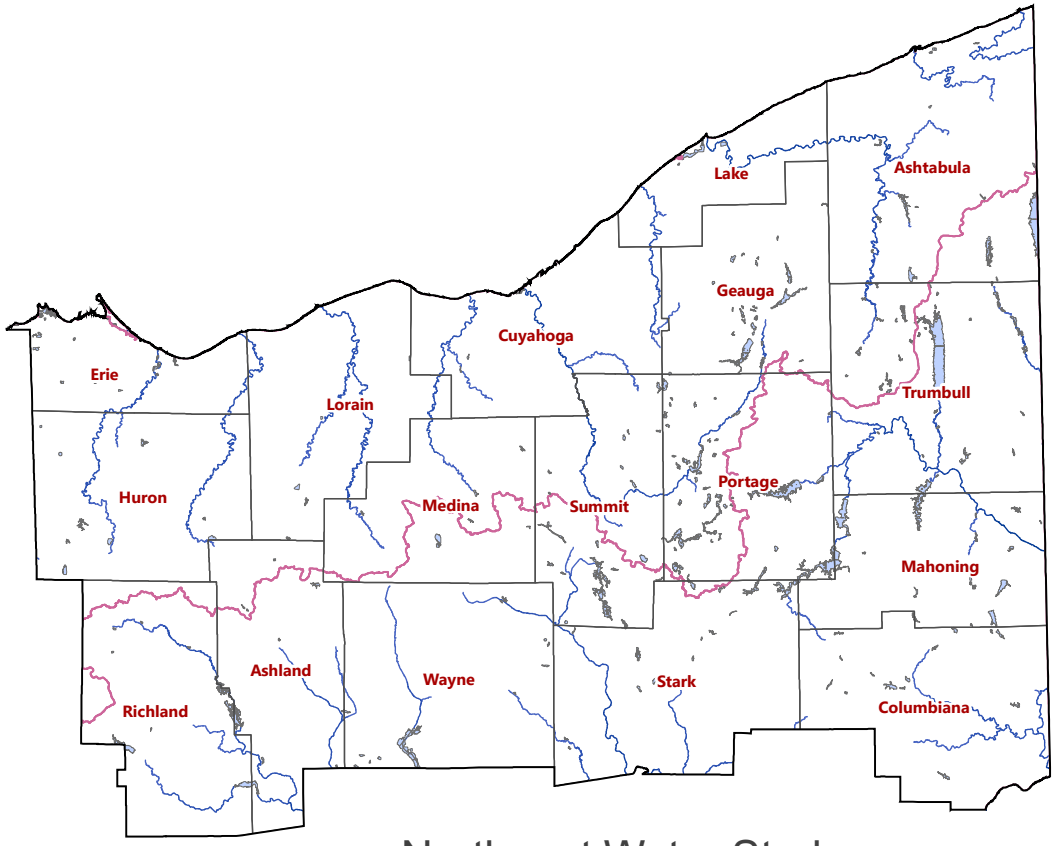
Southwest Water Study

Southeast Water Study

Future Water Studies



Northwest Water Study



Northeast Water Study

Hazen

Ohio Environmental Protection Agency

Ohio Department of Natural Resources

Ohio Water Development Authority

Central Ohio Regional Water Study

Kathleen Smith, Hazen and Sawyer
June 16, 2025