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Catskill Watershed Corporation (CWC) Community Vitality Study of the West of Hudson Watershed

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Report

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Prepared for
CWC

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Executive Summary

Background

The New York City (NYC) drinking water supply, sourced from upstate reservoirs, has been protected through a collaborative framework established by the landmark 1997 Memorandum of Agreement (MOA). This agreement allowed NYC to avoid constructing a costly filtration facility by partnering with watershed communities to protect water quality at the source. The MOA was built on a dual commitment: maintaining high water quality and sustaining **community vitality** in the West of Hudson (WOH) Watershed.

The NYC water supply consists of two main components, the East of Hudson (EOH) and West of Hudson (WOH) divided by the Hudson River. The WOH system is larger and comprised of the Catskill and Delaware watersheds in a rural, largely forested area west of the river, while the EOH is a smaller system in suburban areas east of the river.

The Catskill Watershed Corporation (CWC) was formed out of this MOA as an independent, locally administered non-profit to manage and administer NYC Department of Environmental Protection (NYCDEP) funds for watershed protection and economic/community development activities, including wastewater and stormwater infrastructure projects.

While water quality has historically been extensively monitored and protection measures have been extremely effective, the measurement and monitoring of community vitality inside of the watershed has received significantly less attention. In 2020, the National Academy of Science, Engineering, and Medicine (NASEM) expert panel issued a report on the NYC Watershed Protection Program, in which it recommended that a study on community vitality in the WOH communities be conducted. Subsequently, this study was included as a requirement in the Revised 2017 Filtration Avoidance Determination (FAD) issued by the NYS Department of Health (DOH).

This Study's Mandate

In response to this FAD requirement, the CWC, in collaboration with the NYC Department of Environmental Protection (NYCDEP) and a diverse Stakeholder Committee, commissioned this study to assess community vitality within the WOH Watershed ('the Watershed'). The primary intent was to conduct a comparative analysis between communities inside the Watershed boundary (which delineates NYCDEP regulatory jurisdiction) and a set of designated Control communities outside the boundary.

This assessment was designed to:

- Establish a baseline understanding of community vitality, regulatory burden, financial support, and development potential in the Watershed communities.

- Identify whether major differences exist for these components listed above between the Watershed and Control communities to inform recommendations for improving program supports.

The CWC specifically sought answers to the following five key questions:

1. Do Watershed communities see a net positive or negative based on the totality of variables associated with NYCDEP regulations and programs?

2. What are the biggest variables contributing negatively to community vitality?

3. What additional variables outside NYC programs / regulations could be a cause of concern to Watershed community vitality in future years (electrification, out migration, housing costs or availability, wetland regulations, Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) regulations at wastewater treatment plants, climate change, flooding, emerging contaminants, etc.)

4. What programmatic activities or initiatives may help improve community vitality that do not currently exist? Suggestions may include existing partnerships and programs or new programs that improve community vitality and preferably contribute to water quality protection. Additional options for improving community vitality may be offered if they do not specifically contribute to improving water quality but do not negatively affect water quality.

5. How can measures of community vitality be continually reviewed and updated regularly? What processes exist or should be formed for sustained monitoring of community vitality variables?

Methodology and Framework Snapshot

The study was conducted across five phases from March to November 2025. The CGR Consulting Team developed a framework based on the following major categories of community vitality metrics to compare Watershed communities against a Control group:

- Population and Demographics
- Business and Industry Vitality
- Personal Economic Well-Being, Education, and Workforce
- Children and Youth
- Housing and Real Estate Affordability and Cost
- Effective Local Government, Infrastructure, and Citizen Engagement
- Health, Well-Being, and Public Safety
- Social Vitality and Amenities
- Environment and Natural Resources

Data collection relied on digital sources (U.S. Census Bureau data sets and other publicly available online sources referenced in the text), data requests from various agencies and stakeholders (e.g., NYCDEP, CWC, NYS Department of Health (NYSDOH), etc.) and qualitative input gathered over a cumulative 30 structured interviews and focus groups with more than 80 stakeholders, including municipal officials, engineers, contractors, and organizational representatives.

Metrics were evaluated at both the town level and county level. Town-level analysis grouped communities based on their percentage of land inside the Watershed (Majority, Substantially, Moderately, Marginally) and compared them to Control towns outside the boundary (as identified/selected by the CWC) but located inside of the Watershed counties. Control counties (Chenango, Otsego, and Columbia) were selected for their similar size, population, and rural nature to the Watershed counties.

Summary of Key Findings and Answers to the Study's Questions

Based on comprehensive stakeholder input, community vitality is a multifaceted concept defined primarily by a community's sustainability and affordability, supported by a blend of economic, social, environmental, and structural factors. The study concludes that community vitality in the Watershed is best defined as:

> ***The capacity for a community to sustain and evolve over time as a viable, year-round, and affordable home for its full-time residents.***

This definition is achieved through the integration of multiple factors, including maintaining a stable, affordable year-round population; fostering an economically diverse and sustainable business climate with a strong local workforce; providing affordable housing supported by modern infrastructure; and ensuring a high quality of life with access to essential services and strong schools.

Answer to Question 1 – Finding on Net Impact to Vitality in the Watershed

The study's comparative analysis does not yield a conclusive answer as to whether Watershed communities experience a net positive or net negative impact from the totality of NYCDEP regulations and programs for several reasons:

- Many external factors affect community vitality (i.e., socioeconomic shifts and policy decisions at the state/federal level, etc.).
- Although the overarching definition of community vitality can be shared by different communities, assessing what is 'performing well' or 'performing poorly' for some metrics in a community can be extremely subjective and specific to each community.

- Weighing metrics and aspects of community vitality to produce an overall score or rating is extremely challenging. The concept of community vitality in general and as defined by stakeholders is too multi-faceted to allow for an aggregated rating that is meaningful.

Although a net negative or positive could not be conclusively determined, the individual comparative analyses clearly reveal specific areas where there are differences between Watershed and Control communities and where the Watershed experiences significant challenges, many of which can be directly linked to the regulatory and economic environment created by the dual goals of water quality protection and community vitality. This provides a foundation for discussion and recommendations for targeted interventions.

Conclusions

- The most positive aspects of being in the Watershed revolved around environmental health and access to natural resources/recreation as well as financial support from the CWC and the state agencies. Additionally, the Watershed Agricultural Council (WAC) has an impressive inventory, and it appears that its work has had a positive effect on both water quality and agriculture in the Watershed.
- The most negative impacts of being in the Watershed revolved around enforcement action/violations and regulatory constraints and process leading to some increases in costs and uncertainty related to development of key infrastructure (i.e., septic and stormwater systems).

While being in the Watershed cannot be boiled down to a net negative or positive for a community, we note that the NYCDEP and Watershed communities both have an interest in maintaining and enhancing vitality in Watershed communities. This benefits residents directly and helps the NYCDEP garner a local workforce, especially important as retirements accelerate in coming years.

Answer to Question 2 – Finding on Variables Negatively Affecting Vitality

Based on our evaluations and conversations with diverse stakeholders (refer to the Stakeholder Engagement section for greater details), the following were the most cited and biggest variables negatively affecting community vitality in the Watershed:

- As highlighted in the Developable Lands Analysis, there is limited available developable land. This could potentially lessen the avenues for regional economic development and growth (i.e. limited industrial investment, limited new builds) that will be necessary to sustain these communities.
- Timeline uncertainty/inconsistency illustrated in the Time and Cost Comparison evaluation in Watershed communities causes additional burden by creating planning challenges for property owners and businesses. For seasonal businesses or projects with construction season constraints, even a two-month approval timeline can determine project feasibility.
- Housing affordability was the most cited challenge by stakeholders interviewed. Additionally, this challenge was indicated by housing burden measures and the relative

stability of median household income in the Watershed. Although this issue is not specific to the Watershed, it was one of the most cited challenges by stakeholders in these communities and should be recognized as a key challenge affecting community vitality.

- As discussed in the weather and climate impacts analysis as well as referenced in several interviews and focus groups (with both environmental groups and general stakeholders), there is a large deal of concern over the potential impacts from future extreme weather and storms due to steep slopes and soil fragility; however, it is noted that these impacts are more related to being in the Catskill Mountain range than being in the Watershed boundary.

Answer to Question 3 – Finding on Additional Variables of Concern

Based on the study's findings, the following is a list of key additional variables outside NYC programs / regulations that could be a cause of concern to Watershed community vitality in the future:

- Population, Housing Costs, and Out-Migration: Across all groups and individuals interviewed, the most cited causes for concern about community vitality in the Watershed were housing unaffordability and resulting population instability.
- Infrastructure Decay and Service Gaps: Outside of the infrastructure that is heavily subsidized by NYCDEP (wastewater treatment facilities (WWTF), septic systems, etc.), some public and social infrastructure faces major systemic challenges (i.e., transportation and healthcare access).
- Climate Change and Environmental Resilience: Climate-related factors/issues were noted not only by environmental groups, but elected officials as well as planners and economic development specialists.
- Economic and Social Changes: The ability for the communities to maintain a viable local economy and social structure is at risk from non-regulatory pressures (i.e., small business viability, agriculture decline, declining school enrollment, etc.)

Answer to Question 4 – Programmatic Opportunities to Improve Vitality

Based on the findings from the analyses completed in Chapters 1, 2, and 3 of this study, as well as comprehensive stakeholder interviews/focus groups, multiple programmatic opportunities were presented to improve community vitality while maintaining or enhancing water quality protection. These suggestions align with the 2020 National Academies Expert Panel recommendations incorporated into the 2022 Revised FAD, which emphasized optimizing program activities to continue effective water quality protection while enhancing community vitality.

The five most frequently cited concepts/recommendations (to focus time and resources) from the interviews and focus groups were:

- Workforce Housing: Create land trusts and employer-assisted programs to ensure essential workers can live locally.

- Hamlet-Centered Infrastructure: Target wastewater and other key investments in downtown/village centers to support water-quality-friendly density and economic vitality.
- Regional Coordination & Governance: Create unified, cross-county authorities (like a Regional Economic Development Authority) to pool capacity and coordinate strategy.
- Professional Capacity Building: Fund training institutes and local hiring (e.g., Conservation Corps, Septic Professional Training) to build local expertise and workforce.
- Reformed Financial Strategy: Repurpose the Catskill Fund for the Future (CFF) as a strategic leveraging tool to attract larger state and federal funds.

Specific recommendations and steps for key programmatic activities were provided (see Chapter 4, Question 4) and broken into two main categories:

- Dual benefit (improving both community vitality and water quality): These program recommendations address core community vitality concerns while directly contributing to water quality enhancement/protection (reducing pollution, stabilizing ecosystems, accelerating best management practice (BMP) implementation, etc.).
- Improving community vitality without negatively impacting water quality: These programs would be beneficial for the community vitality (economic and social health) of the Watershed and are deemed to have a neutral impact on water quality when managed appropriately.

Additionally, several recommendations were made for updating technical standards as well as for improving cost mitigation programs.

Answer to Question 5 – Ongoing Monitoring of Vitality

The report emphasizes that the primary mechanism for ensuring sustained community vitality is the **creation of a permanent monitoring infrastructure** that parallels the existing, extensive water quality monitoring system. The current study, while comprehensive, is a static snapshot. To make it a living tool, the report recommends establishing dedicated **Research Capacity**—either a virtual dashboard, a standing CWC Research Unit, or a formal joint research committee—responsible for continuous data collection, analysis, and integration into the decision-making process. This capacity would be essential for tracking progress, informing policy decisions, and ensuring accountability. The infrastructure provides data-driven insight for the CWC, NYCDEP, NYSDOH, and other stakeholders. The report laid out several options for a structure (see Chapter 4, Question 5).

Depending on the level of resources available (and therefore the level of importance placed on the measurement of community vitality and what ongoing measurement/monitoring is ultimately intended to accomplish), there are several recommended overarching structures/approaches (organized by least to most involved/expensive) that could be taken:

- In five years, contract with an external consultant and conduct a similar study to this one and reuse the same metrics and methodologies to assess any changes since the study was completed.

- Contract with an outside consultant to create and maintain a virtual dashboard which would be used for monitoring and updating metrics of community vitality on a more regular basis.
- Establish a dedicated Watershed Community Vitality Research Unit housed within an appropriate institution (CWC, academic, or partnership)
    - Staff with permanent researchers developing deep knowledge of Watershed complexities.
    - Create advisory board including DEP, CWC, DOH, county governments, and community representatives.
    - Provide secure funding stream through FAD requirements or Watershed program budgets.

With any of these options, in the interim, it is recommended that the stakeholders use the findings from this report to advise the formation and negotiation of the newest FAD, and through this process, create an advisory board including DEP, CWC, DOH, county governments, and community representatives to discuss this topic on a monthly basis to assess what program options to implement, decide on what metrics to track, etc.

The report also laid out the following:

- Suggested components of a monitoring system
- A monitoring framework and metrics
- A potential implementation roadmap
- Some additional areas for future research and lessons learned

Conclusion

Sustained monitoring of community vitality variables represents a critical evolution in Watershed management, paralleling the extensive monitoring already in place for water quality protection. By establishing dedicated research capacity, systematic data collection, and integration with policy decision-making, the Watershed can effectively track community vitality outcomes and adaptively manage programs to optimize both water quality protection and community well-being.

As the 2022 Revised FAD emphasized, the goal is to optimize the mix of program activities to continue effective water quality protection while enhancing the incremental benefits to community vitality. Sustained monitoring provides the essential information infrastructure to achieve this optimization, ensuring that Watershed management decisions are informed by comprehensive data on both water quality and community vitality outcomes.

Acknowledgements

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CWC: Jason Merwin, Tim Cox, Gemma Young, Racheal Burger, and staff

NYCDEP: Shilo Williams, Matt Giannetta, John Schwartz, and staff

The members of the West of Hudson Water Stakeholder Committee assisted in guiding and providing feedback on this report.

Watershed Agricultural Council: Serena Orleski

Catskill Center for Conservation and Development: Jeff Senterman

Delaware County: Tina Mole, Shelly Johnson-Bennett

Greene County: Tom Hoyt

Schoharie County: Alicia Terry

Sullivan County: Chris Mathews

Ulster County: Dennis Doyle

Staff Team

Senior Associate Wiley Little managed the project and consultant team and prepared the report, under the guidance of CGR President Erika Rosenberg and Principal Paul Bishop. Data Analytics Manager Katherine Bell and Research Associate Alina Santiago provided data collection and analysis.

Consultant Team

The CGR Consulting Team included two partners that provided invaluable content expertise and assistance in completing this analysis: LaBella Associates, P.C. and UrbanSense, Inc. We specifically thank Derik Kane and Megan Wright of LaBella and Neysa Pranger and Manasvi Menon of UrbanSense for their dedication to completing this report to a high level of quality.

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Introduction

Background

In 1997, the landmark Memorandum of Agreement (MOA) between New York City (NYC), the 70 watershed municipalities living around the bodies of water that source all of NYC's drinking water, New York State, and several environmental groups was signed. Spurred by impending environmental regulation changes at the NY State and US federal level (Environmental Protection Agency, EPA) which would have required NYC to construct a costly filtration facility to treat its drinking water from its upstate sources, this agreement allowed NYC to avoid the facility's construction by creating a more collaborative working relationship between upstate and downstate stakeholders to protect the NYC water supply at its source.

The NYC water supply consists of two main components, the East of Hudson (EOH) and West of Hudson (WOH) divided by the Hudson River. The WOH system is larger and is comprised of the Catskill and Delaware watersheds in a rural, largely forested area west of the river, while the EOH is a smaller system in suburban areas east of the river.

The 1997 MOA between the watershed communities and the NYCDEP was built on the understanding that watershed communities would help protect NYC's drinking water quality in the watershed, and in return, NYCDEP would provide them with funding for protection activities and economic/community development activities. This MOA was built on the combined goals of maintaining both water quality and 'community vitality' in the watershed communities.

Born out of the 1997 MOA, the Catskill Watershed Corporation (CWC) was formed in the WOH watershed.[1] The CWC was envisioned to create a "working partnership between the City and [upstate watershed residents] that carried out the many Watershed Protection and Partnership Programs" by establishing an "independent and locally administered not-for-profit corporation."[2] The CWC is responsible for (among other things) creating programs and administering funds from NYCDEP targeted at wastewater infrastructure (septic treatment facilities); stormwater infrastructure to reduce pollution to bodies of water; education; and economic development projects in the WOH watershed communities.

While water quality has historically been extensively monitored and protection measures have been extremely effective, the measurement and monitoring of community vitality inside of the watershed has received significantly less attention. In 2020, the National Academy of Science, Engineering, and Medicine (NASEM) expert panel issued a report on the NYC

[1] At the time of the signing of the MOA in 1997, there were 50 municipalities in the WOH; today (2025), there are 41 towns and 8 villages.
[2] Michael C. Finnegan, *New York City's Watershed Agreement: A Lesson in Sharing Responsibility*, 14 Pace Envtl. L. Rev. 577, 585 (1997).

Watershed Protection Program, in which it recommended that a study on community vitality in the WOH communities be conducted. Subsequently, this study was included as a requirement in the Revised 2017 Filtration Avoidance Determination (FAD)[3] issued by the NYS Department of Health (DOH).

The Study

While community vitality in the West of Hudson Watershed (herein referred to as 'the Watershed' – map of area provided below) was studied previously (see the 2020 Academy of Science report and the 2023 Community Vitality Report by Sternberg et. Al., University of Buffalo), in 2024, the CWC – in collaboration with NYCDEP and other parties – issued a Request for Proposal (RFP) to conduct a more comprehensive study of the community vitality of the Watershed[4] to begin to close the gap between the level of attention that water quality receives in comparison to the attention that community vitality receives.

A West of Hudson Watershed Stakeholder Committee, consisting of a diverse mix of stakeholders from all over the Watershed was created to assist the CWC with creating this RFP, as well as to support the CWC throughout the study.

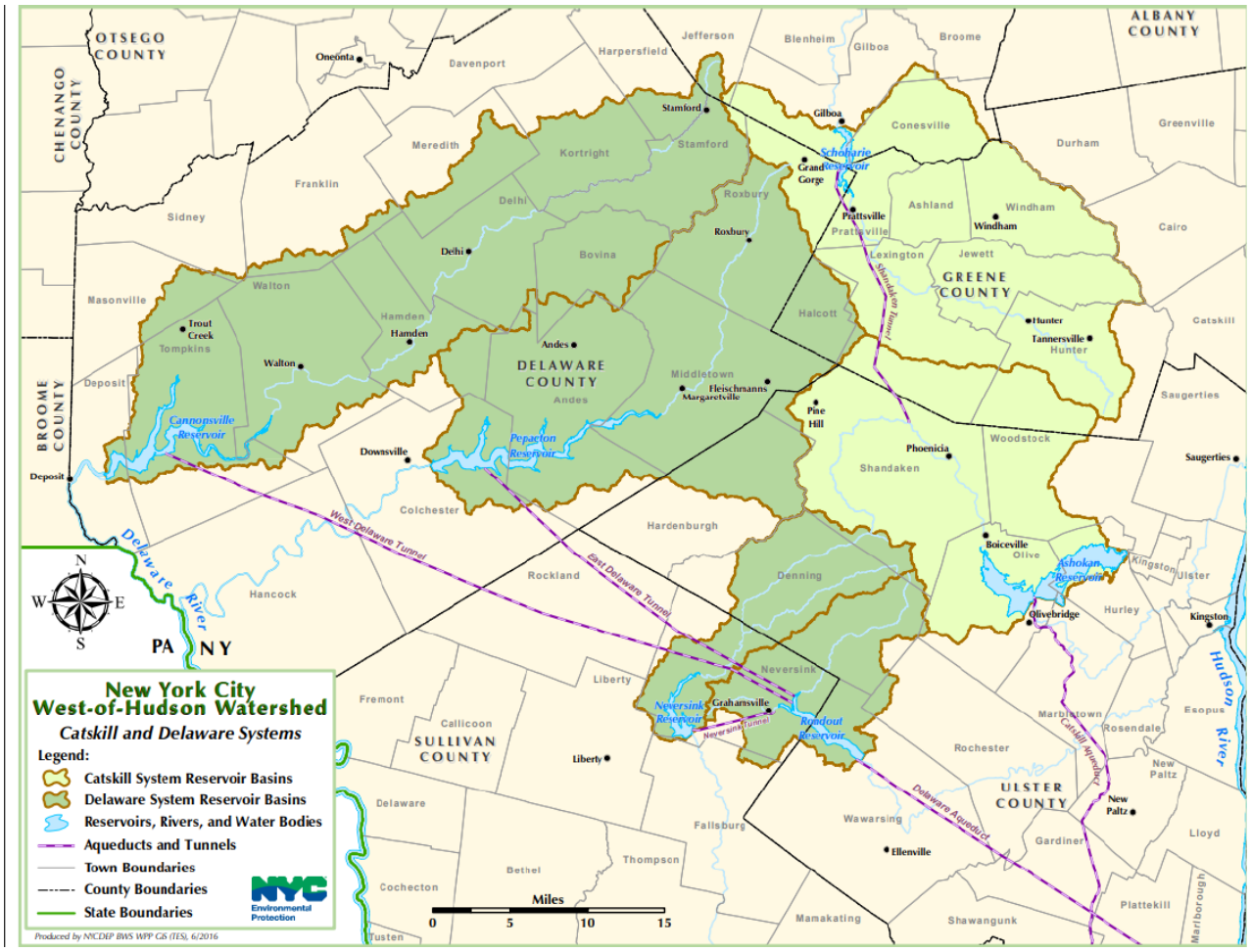
The intent of this study was to assess community vitality in the Watershed by conducting a comparative analysis between communities in the Watershed (a community is in the Watershed when it is located inside of the boundary line that delineates NYCDEP regulatory jurisdiction; see map and table below for towns and portions of counties – the boundary does not evenly fall on county lines – that are included in the Watershed) and communities outside the Watershed (the Control group). This assessment was done to:

- Establish a baseline understanding of community vitality (based on a series of holistic metrics), regulatory burden, financial support, and development potential in the Watershed communities.
- Assess whether any (and at what scale) major differences exist in community vitality, regulatory burden, financial support and development potential between Watershed communities and the Control communities outside the Watershed so that recommendations could be made for improving program supports to Watershed communities.

In March 2025, the CWC retained CGR, LaBella, and UrbanSense ('CGR Consulting Team') to conduct this study.

[3] The FAD is a major component of the 1997 MOA; it is a regulatory waiver issued by the NYSDOH that allows NYC to avoid building and operating a costly filtration plant for its WOH (Catskill/Delaware reservoirs) watershed. For more information, visit https://www.health.ny.gov/environmental/water/drinking/nycfad/

[4] A copy of the original RFP is included in **Appendix A.**



County	Town
Delaware County	Andes, Bovina, Colchester, Delhi, Deposit, Franklin, Hamden, Harpersfield, Kortright, Masonville, Meredith, Middletown, Roxbury, Sidney, Stamford, Tompkins, Walton
Greene County	Ashland, Halcott, Hunter, Jewett, Lexington, Prattsville, Windham
Schoharie County	Broome, Conesville, Gilboa, Jefferson
Sullivan County	Fallsburgh, Liberty, Neversink
Ulster County	Denning, Hardenburgh, Hurley, Town of Kingston, Marbletown, Olive, Rochester, Shandaken, Wawarsing, Woodstock

In conducting this study, the CWC hoped to answer the following key questions:

1. Do Watershed communities see a net positive or negative based on the totality of variables associated with NYCDEP regulations and programs?

2. What are the biggest variables contributing negatively to community vitality?

3. What additional variables outside NYC programs / regulations could be a cause of concern to Watershed community vitality in future years (electrification, out migration, housing costs or availability, wetland regulations, Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) regulations at wastewater treatment plants, climate change, flooding, emerging contaminants, etc.)

4. What programmatic activities or initiatives may help improve community vitality that do not currently exist? Suggestions may include existing partnerships and programs or new programs that improve community vitality and preferably contribute to water quality protection. Additional options for improving community vitality may be offered if they do not specifically contribute to improving water quality but do not negatively affect water quality.

5. How can measures of community vitality be continually reviewed and updated regularly? What processes exist or should be formed for sustained monitoring of community vitality variables?

Approach and Methodology

The CGR Consulting Team's study picked up where previous studies left off by first engaging in a planning period to discuss and establish a holistic framework for characterizing/measuring different aspects of community vitality in the Watershed and Control communities as well as a framework for comparing the Watershed communities to Control communities (outside Watershed). Once these frameworks and metrics were established, the CGR Consulting Team collected and analyzed data to better illustrate the status of community vitality and from there answer the key questions asked by the CWC.

Project Planning (March – April 2025):

This phase consisted of initial coordination and kick off meetings between the CWC, the West of Hudson Watershed Stakeholder Committee and the CGR Consulting Team; the creation of the overall project schedule and project management plan; and the development and establishment of metrics, data, and comparison frameworks for assessing community vitality in the Watershed and Control communities.

The purposes of these metrics of community vitality were to:

1. Provide a baseline understanding of how communities are doing from a holistic standpoint (economic, education, health and safety, social, etc.)

2. Use this baseline to provide recommendations for how to continue to monitor/measure community vitality and for how to address gaps and issues in community vitality in the Watershed communities while simultaneously improving water quality or at least not negatively impacting it

The finalized list of metrics agreed upon between the CGR Consulting Team, the CWC, and the West of Hudson Watershed Stakeholder Committee was made up of metrics explicitly listed in the original RFP as well as metrics suggested by the CGR Consulting Team. The final list does not include all metrics in the RFP as some were removed based on discussions of feasibility and impact by the group during the planning phase. Additionally, as data collection and analysis occurred, several metrics that were identified in the planning phase were either adjusted or removed because of things like a lack of available data; a list that documents these removals and changes is provided in **Appendix B.**

The final list of metrics that were collected and evaluated as a part of this study is included below. The metrics are categorized according to the following major groups:

- Population and Demographics
- Business and Industry Vitality
- Personal Economic Well-Being, Education, and Workforce
- Children and Youth
- Housing and Real Estate Affordability and Cost
- Effective Local Government, Infrastructure, and Citizen Engagement
- Health, Well-Being, and Public Safety
- Social Vitality and Amenities
- Environment and Natural Resources

Chapter 1 Community Vitality Metrics

Category	Measure	Data Level	Source
Population and Demographics	Change in Total Population	Town	US Census Bureau, 2024
Population and Demographics	Change in Population by Age	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Population and Demographics	Population by Age (Dependency Ratios)	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Population and Demographics	Household Types	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Population and Demographics	% In-Same House as One Year Ago	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Business & Industry Vitality	Establishments by Sector and Change in Establishments by Sector	County	US Census County Business Patterns (CBP), 2023
Business & Industry Vitality	Payrolled Businesses by Sector and Change in Payrolled Businesses by Sector	County	Lightcast, 2025
Business & Industry Vitality	Establishment Exit Rate and Establishment Exits by Sector	County	Business Dynamics Statistics Program (BDS), US Census Bureau, 2022
Business & Industry Vitality	Total Number of New Business Startups and New Business Startups by Sector	County	Business Dynamics Statistics Program (BDS), US Census Bureau, 2022
Business & Industry Vitality	Average Wage and Average Wage by Industry	County	US Census County Business Patterns (CBP), 2023
Business & Industry Vitality	Percent Livable Wage Jobs (Percent of Jobs Above Livable Minimum Wage)	County	NYS Department of Labor (DOL) Quarterly Census of Employment and Wages
Business & Industry Vitality	Cost of Living Index	County	Council for Community and Economic Research via Lightcast, 2025
Business & Industry Vitality	# Acres of Land in Agricultural Districts and Change in # of Acres of Land in Agricultural Districts	County (& within Watershed Boundary)	Cornell University Geospatial Information Repository
Business & Industry Vitality	% of Land in Eligible Agricultural Land	County	US Department of Agriculture Census of Agriculture (2022); Cornell University Geospatial Informational Repository
Business & Industry Vitality	Value of Agricultural Land - Market Value of Agricultural Products Per Acre	County	US Department of Agriculture Census of Agriculture (2022); Cornell University Geospatial Informational Repository
Business & Industry Vitality	Value of Agricultural Land - Market Value of Agricultural Products Per Acre of Farmland	County	US Department of Agriculture Census of Agriculture (2022); Cornell University Geospatial Informational Repository

Business & Industry Vitality	Value of Agricultural Land - Market Value of Land and Buildings per Acre	County	US Department of Agriculture Census of Agriculture (2022); Cornell University Geospatial Informational Repository
Business & Industry Vitality	Value of Agricultural Land - Market Value of Land Buildings Per Acre of Farmland	County	US Department of Agriculture Census of Agriculture (2022); Cornell University Geospatial Informational Repository
Personal Economic Well-Being, Education, and Workforce	Change in Education Levels of Adults	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	Change in Median Household Income	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	% People Living in Poverty and Change % People Living in Poverty	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	% Households Receiving SNAP Benefits and Change in % Households Receive SNAP benefits	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	Means of Transportation to Work	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	Commute Time to Work (in Minutes)	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	GINI Index	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Personal Economic Well-Being, Education, and Workforce	Sales Tax per Capita Trend	County	New York State Department of Taxation and Finance, with calculations by the Office of the New York State Comptroller
Children and Youth	Childcare Programs per 1,000 Children	County	New York State Office of Children and Family Services, OpenGov NY
Children and Youth	% Children Living in Poverty and Change in % Children Living in Poverty	County	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Children and Youth	% Disengaged Youth, Ages 16-19 and Change in % Disengaged Youth	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Children and Youth	High School Graduation Rates and Change in High School Graduation Rates	County/School Districts	NYS Education Department
Housing and Real Estate Affordability and Cost	Homeownership Rate	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Housing and Real Estate Affordability and Cost	Median Home Value	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Housing and Real Estate Affordability and Cost	Rent Burdened Households	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Housing and Real Estate Affordability and Cost	Owner Burdened Households	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Housing and Real Estate Affordability and Cost	Median Rental Prices	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Housing and Real Estate Affordability and Cost	Vacant Housing Unit Rate and Rate of Change of Total Number of Units	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Housing and Real Estate Affordability and Cost	Number of Seasonal or Recreational Housing Units (SR&O) and Rate of Change of Total Number Units	Town, County (Watershed and Control comparison only at County)	US Census Bureau's 2023 American Community Survey (ACS) 5-year data
Housing and Real Estate Affordability and Cost	Short-Term Rental Listings	County	Rabbu
Housing and Real Estate Affordability and Cost	New Housing Starts and Permits Issued and Percent Change	County	US Census Bureau Building Permit Survey (BPS)
Housing and Real Estate Affordability and Cost	Total Value of New Units and Percent Change in Total Value	County	US Census Bureau Building Permit Survey (BPS)
Housing and Real Estate Affordability and Cost	Total New Single Family Units and Percent change, Total New Multi-Family Units and Percent Change	County	US Census Bureau Building Permit Survey (BPS)
Housing and Real Estate Affordability and Cost	Foreclosure Rates / Derelict properties	Town	RealtyTrac
Housing and Real Estate Affordability and Cost	Total Assessed Value per Capita (TAV) and Percent Change	Town, County (Watershed and Control comparison only at County)	New York State Department of Taxation and Finance, Municipal Profiles
Effective Local Government, Infrastructure, and Citizen Engagement	% Households with Internet Access and Change % Households with Internet Access	Town	US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Effective Local Government, Infrastructure, and Citizen Engagement	Local Government General Property Tax Levy - County Tax Rate (Normalized per $1,000 and Change	County	NYS Office of Real Property Tax Services (ORPTs) Municipal Data Portal
Effective Local Government, Infrastructure, and Citizen Engagement	Local Government General Property Tax Levy - Municipal Tax Rate (Normalized per $1,000 and Change	Town	NYS Office of Real Property Tax Services (ORPTs) Municipal Data Portal
Effective Local Government, Infrastructure, and Citizen Engagement	Voters Registered per Capita	Town	Source: New York State Board of Elections, US Census Bureau
Effective Local Government, Infrastructure, and Citizen Engagement	Population Served by Community Water Systems	Town	NYS Department of Health (DOH)
Effective Local Government, Infrastructure, and Citizen Engagement	Wastewater Access and Capacity Remaining	Town/District	NYCDEP and CWC
Health, Well-Being, and Public Safety	Property Crime Rate per 10,000 Residents	County	Federal Bureau of Investigation, New York State Division of Criminal Justice Services
Health, Well-Being, and Public Safety	Violent Crime Rate per 10,000 Residents	County	Federal Bureau of Investigation, New York State Division of Criminal Justice Services
Health, Well-Being, and Public Safety	Numbers of Members at Fire Departments per 1,000 Residents	County/Department Level	New York State Division of Homeland Security and Emergency Services (DHSES)
Health, Well-Being, and Public Safety	Physicians per Capita (per 100,000 residents)	County	US Health Resources and Services Administration
Health, Well-Being, and Public Safety	Mental Health Office Clinic Visits per Capita (per 1,000 residents)	County	New York State Office of Mental Health
Health, Well-Being, and Public Safety	Deaths from Drug Overdoses per Capita (per 100,000 residents)	County	New York State Department of Health
Social Vitality and Amenities	Number of Libraries per 1,000 people	County	NYS Library Public Library Service Area Maps https://www.nysl.nysed.gov/libdev/libs/service-area-maps (# libraries), 2023 Census (Approx. Population)
Environment and Natural Resources	Quality of Conservation Areas (Ground Cover, Soil Characteristics/Quality, Wetlands and Wetland Buffers Acreage and Change, Conservation Land Protections, Presence of Invasive Species, Natural Heritage Communities)	County	US Fish and Wildlife Service (USFWS), US Geological Survey, Natural Resources Conservation Service (NRCS) Gridded Soil Survey Geograhpic Database, NYS Environmental Resource Mapper, iNaturalist Observational Data, NYS GIS Clearinghouse
Environment and Natural Resources	Drinking Water Quality (EJ Index and Drinking Water Reports)	County	US Census, 2024, NYS Department of Health Annual Drinking Water Quality Report
Environment and Natural Resources	Air Quality	County	NYSDEC, AirNow.gov
Environment and Natural Resources	Weather Impacts / Climate Events (Federal Disaster Declarations Analysis)	County	Rebuild by Design

Chapter 2 Evaluation of Areas of Development Opportunities and Regulatory Controls

Analysis	Data Level	Source
Developable Lands Analysis	Watershed Boundary Vs. Control Counties	US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), NYSDEC, NYCDEP
Summary of Regulatory Burdens Analysis	-	Interviews, NYSDOH, NYCDEP Long-Term Watershed Protection Plan 2021, CWC
Regulatory Time and Cost Comparison Analysis	Watershed Region Vs. Control Counties	Interviews, Focus Groups, Data Requests, NYCDEP
Environmental Violations Evaluation	Town (just Watershed), County (Comparison)	NYCDEP, Interviews, Focus Groups, EPA, US Census 2023
Wastewater Rate Evaluation	Town	Data requests from municipalities and web searches on municipality websites

Chapter 3 Evaluation of Benefits to Watershed Counties and Towns

Analysis	Data Level	Source
Funding and Employee Evaluation	Town (Funding), Watershed (Employees; no Control comparison)	Data requests (CWC, DEC, ESD, EFC, WAC)
Recreational Access (percentage of acreage used for rec activities, miles of recreational trails, # fishing access points, # boat launch sites)	Watershed Level (no Control comparison)	NYCDEP and USFWS, 2020 Greater Catskill Region Region Comprehensive Recreation Plan
Agricultural Benefits and Opportunities	Watershed Level (no Control comparison)	2023 Community Vitality Report (Sternberg et. Al., University of Buffalo), NYCDEP Filtration Avoidance Report 2021, WAC, US Census of Agriculture -- see Chapter 1 Ag Statistics for Sources (data referenced in this write up)

Comparison Methodology

The CGR Consulting Team developed the following comparison framework for evaluating metrics in the Watershed and in the Control communities. Some metrics were evaluated at the town level, while others were evaluated at the county level, so we proposed Control towns and counties for comparison purposes to Watershed towns and Watershed counties.

> ***The methodology explained in the following sections is referenced throughout this report in all the different analyses; this framework should be used as a guide for understanding baseline assumptions that were made in order to make comparison observations/findings.***

Town Level Evaluation

The table below summarizes the Watershed counties and their respective towns that have at least a portion of land in the Watershed.[5]

County	Town	Total Land, Sq Mi	Approximate Land in Watershed, Sq Mi	% of Town in Watershed
<u>Delaware County:</u> **Total Area:** 1,467 sq mi (938,880 acres) **Approx. Area in Watershed:** 784.4 sq mi (53%) **Population (2023):** 44,410 people	Andes	112.4	101.2	90%
	Bovina	44.5	44.5	100%
	Colchester	142.2	28.4	20%
	Delhi	64.6	64.6	100%
	Deposit	44.6	4.5	10%
	Franklin	81.5	8.2	10%
	Hamden	60.1	54.1	90%
	Harpersfield	42.3	12.7	30%

[5] Total land area and population data were acquired from 2023 Census Data while the amount and percentage of land in the Watershed were acquired by using ArcGIS and measuring the portion of town boundaries that overlapped with the NYCDEP boundary of the Watershed; total area in the Watershed in a county is the aggregate total of all town estimates.

Pop. Density (2023): 30.3 people/sq mi	Kortright	62.6	37.6	60%
	Masonville	54.4	10.9	20%
	Meredith	58.3	23.3	40%
	Middletown	97.3	97.3	100%
	Roxbury	87.6	87.6	100%
	Sidney	50.6	1.4	3%
	Stamford	48.6	48.6	100%
	Tompkins	104.4	73.1	70%
	Walton	97.6	87.8	90%
Greene County: **Total Area:** 658 sq mi (421,120 acres) **Approx Area in Watershed:** 311.2 sq mi (47%) **Population (2023):** 47,062 people **Pop. Density (2023):** 71.5 people/sq mi	Ashland	24.6	24.6	100%
	Halcott	23.0	23.0	100%
	Hunter	90.2	67.7	75%
	Jewett	50.5	50.5	100%
	Lexington	80.3	80.3	100%
	Prattsville	19.7	19.7	100%
	Windham	45.4	45.4	100%
Schoharie County: **Total Area:** 626 sq mi (400,640 acres) **Approx. Area in Watershed:**	Broome	48.1	0.1	<1%
	Conesville	39.5	33.6	85%
	Gilboa	59.4	17.8	30%
	Jefferson	43.4	4.3	10%

55.7 sq mi (9%) **Population (2023):** 30,105 people **Pop. Density (2023):** 48.1 people/sq mi				
Sullivan County: **Total Area:** 1,011 sq mi (647,040 acres) **Approx. Area in Watershed:** 69.1 sq mi (7%) **Population (2023):** 79,920 people **Pop. Density (2023):** 79.1 people/sq mi	Fallsburgh	79.0	1.9	2%
	Liberty	80.7	0.5	<1%
	Neversink	86.4	69.1	80%
Ulster County: **Total Area:** 1,161 sq mi (743,040 acres) **Approx. Area in Watershed:** 355.7 sq mi (31%) **Population (2023):** 182,333 people	Denning	105.8	89.9	85%
	Hardenburgh	81.0	40.5	50%
	Hurley	36.0	12.6	35%
	Kingston	8.6	<0.1	<1%
	Marbletown* *Vast majority (>95%) of land in Watershed is a body of water (Ashokan Reservoir)	54.9	0.4	<1%

Pop. Density (2023): 157 people/sq mi	Olive	65.1	45.6	70%
	Rochester	88.8	3.0	3%
	Shandaken	119.8	119.8	100%
	Wawarsing	133.9	13.4	10%
	Woodstock	67.8	33.9	50%

Source: ArcGIS mapper; utilized the NYCDEP Watershed Boundary layer, overlaid the Northeastern States Town Boundary Set (July 3, 2023), and utilized the measuring tool to estimate the areas.

For metrics compared at the town level, the CGR Consulting Team and CWC created a Control group of towns that are in the Watershed counties but are outside the Watershed boundary, listed below.

County	Towns
Delaware County	Davenport, Hancock
Greene County	Athens, Cairo, Durham
Schoharie County	Esperance, Middleburgh, Wright
Sullivan County	Rockland
Ulster County	Saugerties, Shawangunk

To develop an aggregate analysis of how the share (percentage) of the town that is in the Watershed influences townwide conditions (i.e., are there observable patterns/differences between communities that are in the Watershed or outside of it?) the CGR Consulting Team grouped communities in the following way (percentages of land according to the tables summarized above):

- Majority in Watershed (greater than or equal to 90%)
- Substantially in Watershed (less than 90%, greater than or equal to 60%)
- Moderately in Watershed (less than 60%, greater than or equal to 30%)
- Marginally in Watershed (less than 30%)

- Control, outside Watershed

Margins of Error (MOEs)

The reader should note that there are margins of error associated with much of the data presented at the town level. Therefore, even in cases where there appear to be differences, the true values may be more similar than it appears. Due to the number of measures and complexity of calculating aggregated margins of error for town groupings, we did not calculate or present them, but we do factor in our understanding and judgment of MOEs in drawing conclusions and findings.

County Level Comparison

The following counties were selected as Control counties for data comparison at the county level. These are counties that are near the Watershed counties but have none of their land inside the Watershed boundary.

County	Description/Rationale for Including
Chenango County	The County has an approximate population of 46,000 people (2023), an area of 899 sq mi, and a population density of 51 people/sq mi. Chenango has similar size, population, and population density to Watershed counties, is predominantly rural, and is equally far from NYC as the Watershed counties.
Otsego County	The County has an approximate population of 60,000 people (2023), an area of 1,016 sq mi, and a population density of 60 people/sq mi. Otsego has similar size, population, and population density to Watershed counties, is predominantly rural, and is equally far from NYC as the Watershed counties.
Columbia County	The County has an approximate population of 61,000 people (2023), an area of 648 sq mi, and a population density of 94 people/sq mi. Columbia has similar size, population, and population density to Watershed counties, is predominantly rural, and is equally far from NYC as the Watershed counties.

Important Limitation

The percentage of land inside the Watershed boundary ranges from 7% to 53%, shown below as well as in the Town Level Evaluation table above:

- Delaware County: 53%
- Greene County: 47%
- Schoharie County: 9%

- Sullivan County: 7%
- Ulster County: 31%

Throughout this report, we compare Watershed and Control counties but note that drawing conclusions at the county level is difficult not only because of the variations in amount of land in the Watershed but also because 4 of the 5 counties have less than half their land in the Watershed. Therefore, differences between Watershed and Control counties may be due to differences in measures inside or outside (or both) of the Watershed boundary within Watershed counties.

Stakeholder Engagement Methodology

This study incorporated perspectives from a wide range of stakeholders working in and around the Watershed, including engineers, contractors, municipal officials, and organizational representatives. Stakeholder input was gathered through structured interviews, focus groups, and written responses between May and July 2025. These were conducted both in person and virtually through video conferencing.

Stakeholders were identified through referrals from both the CWC as well as members of the West of Hudson Watershed Stakeholder Committee. More than 30 (combined/cumulative) 1-on-1 interviews and focus groups were conducted over the course of this study. On several occasions, requests for interviews and focus groups were extended to identified stakeholders, but either no response was received, or response was limited and a focus group was never successfully scheduled.

More than 80 people participated in focus groups and interviews from more than 40 different organizations. Participation was voluntary, and perspectives shared represent individual experiences rather than systematic survey results. More than 50 stakeholders who we reached out to did not respond to our request.

Qualitative input from stakeholders such as quotes and observations (see “Limitations to Methodology” section below for important caveats) are utilized in this report in the following sections of this report:

- Regulatory Time and Cost Comparison
- Recreation and Access to Natural Resources in the Watershed
- Agricultural Benefits and Opportunities in the Watershed
- Chapter 4 (answers to key questions, conclusions, and recommendations)

A full list of interviews and focus groups conducted as well as an example question protocol can be found in **Appendix C.**

Limitations to Methodology

This qualitative stakeholder input provides valuable context and illustrative examples but has important limitations:

- Self-selected or referral-based sample, not random or comprehensive
- Individual experiences may not be representative of all practitioners
- Perspectives reflect specific project types, geographies, and time periods

> ***Quotes and examples presented in this report should be understood as illustrative of experiences reported by some stakeholders, not as evidence of prevalence or typicality across all Watershed projects or practitioners.***

Project Phases

Community Vitality Metric Data Collection and Analysis (April – September 2025)

This phase consisted of data collection through various digital U.S. Census Bureau data sets (e.g., American Community Survey (ACS), Public Use Microdata Sample, etc.) and other publicly available online sources as well as data collection through focus groups[6], interviews, and email correspondence with municipal leaders and other stakeholders. Additionally, data from previous engagements outside this study and completed by members of the CGR Consulting Team were drawn upon. All collected data was then analyzed with key observations and findings presented in written narrative, tables, and figures.

The full list of metrics was presented in the Project Planning section of this report.

Evaluation of Areas of Development Opportunities and Regulatory Controls (May – September 2025)

This phase consisted of conducting GIS Land Evaluations as well as a series of interviews/focus groups to collect information about regulations, violations, and information about construction and infrastructure inside and outside the Watershed.

The goal of this phase of work was to understand the relative impact that being a community in the Watershed had on regulatory burden of development (financial cost and time cost), development potential (land available for development), wastewater rate costs, and environmental violations. This was compared to Control communities to assess the difference in burden associated with these items between the two groups.

[6] A full list of focus groups and interviews held can be found in Appendix C

Evaluation of Positive Mitigation Measures – Funding Availability, Employment Opportunities, Recreation (May – September 2025)

This phase consisted of collecting and analyzing data from a variety of agencies as well as drawing on interviews and focus groups conducted in Chapters 1 and 2 to analyze and draw conclusions on the benefits of being inside the Watershed.

Summary and Recommendations (September 2025 – November 2025)

Based on all work completed in prior phases, the CGR Consulting Team synthesized data for an overall assessment of community vitality in the Watershed and outside the Watershed and answered key questions identified in the RFP.

Chapter 1: Community Vitality Metrics

This chapter presents the community vitality metrics that were discussed and agreed upon between the CGR Consulting Team and the CWC during the planning phase (with certain metrics removed/changed, as discussed in the Planning Section and illustrated in **Appendix B**).

For reference, the final list of metrics that were evaluated can be found in the Project Planning Section.

The following subsections are organized by major subcategory of metrics with key findings for all metrics in that subcategory summarized at the front, followed by the more detailed evaluations and observations/findings of each individual metric.

Population and Demographics

Key Findings

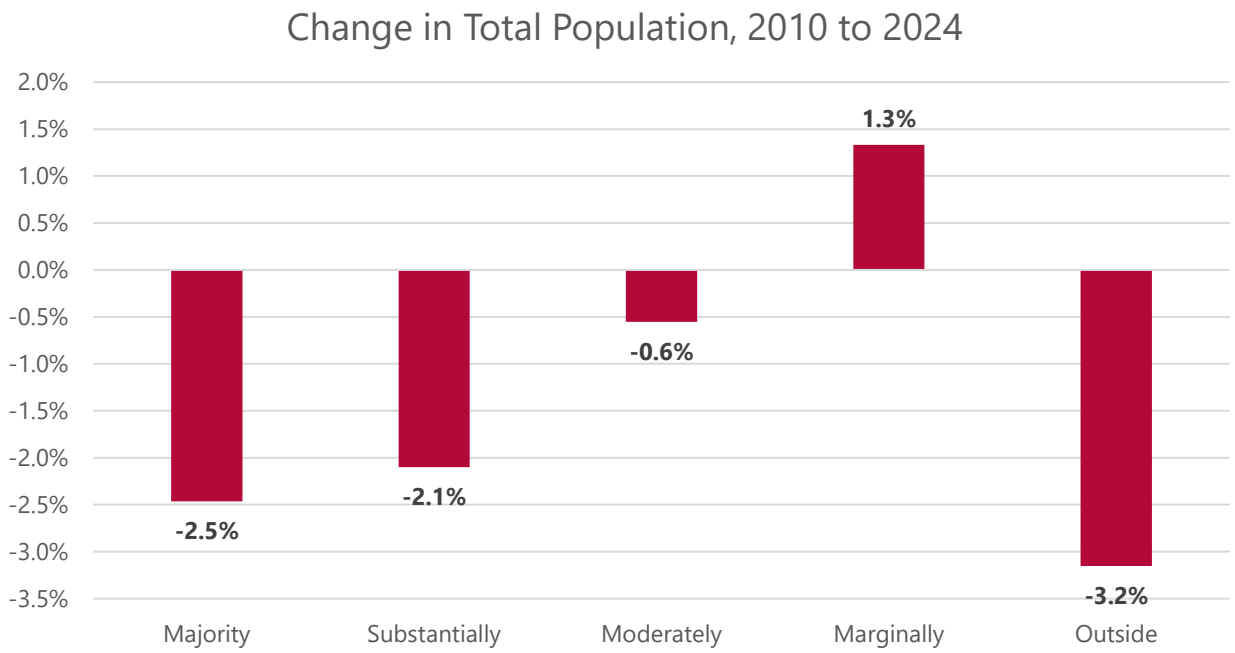
- **Change in total population:**
  - From 2010 to 2024, towns Majority and Substantially in the Watershed experienced a greater decline in population than those towns Moderately in the Watershed, while towns Marginally in the Watershed experienced growth.
  - Towns outside the Watershed had the largest average decrease in total population of all town groups between 2010 and 2024.
- **Change in population by age:**
  - Since 2009, both towns inside and outside the Watershed experienced population decreases in younger population and growth in senior communities, showing no clear difference between inside vs. outside the Watershed.

  - Towns Moderately and Substantially in the Watershed had the most explosive growth in people 85 years and older since 2009 (117% and 62.8%, respectively).

- **Dependency ratio:**
  - All towns, both inside and outside the Watershed, had a dependency ratio under 100, meaning they had more working-age adults than dependents. However, towns outside the Watershed had a lower dependency ratio than the towns inside the Watershed.
  - While towns Moderately in the Watershed had the highest dependency ratio of all Watershed towns, all town groups in the Watershed were relatively high on this metric.

- **Household type:** Patterns in the composition of households were similar across towns inside and outside the Watershed. All areas were dominated by households composed of couples married without children and households with an adult living alone; this trend is indicative of the decreasing number of children both inside and outside the Watershed.
- **Same house as one year ago:**
  - There was high residential stability (householders living in the same house as one year ago) in both towns inside and outside the Watershed (90–93%).
  - In the Watershed, there was slightly lower residential stability in towns Majority and Substantially in the Watershed (90.5%) than in towns Moderately and Marginally in the Watershed (92.7%).

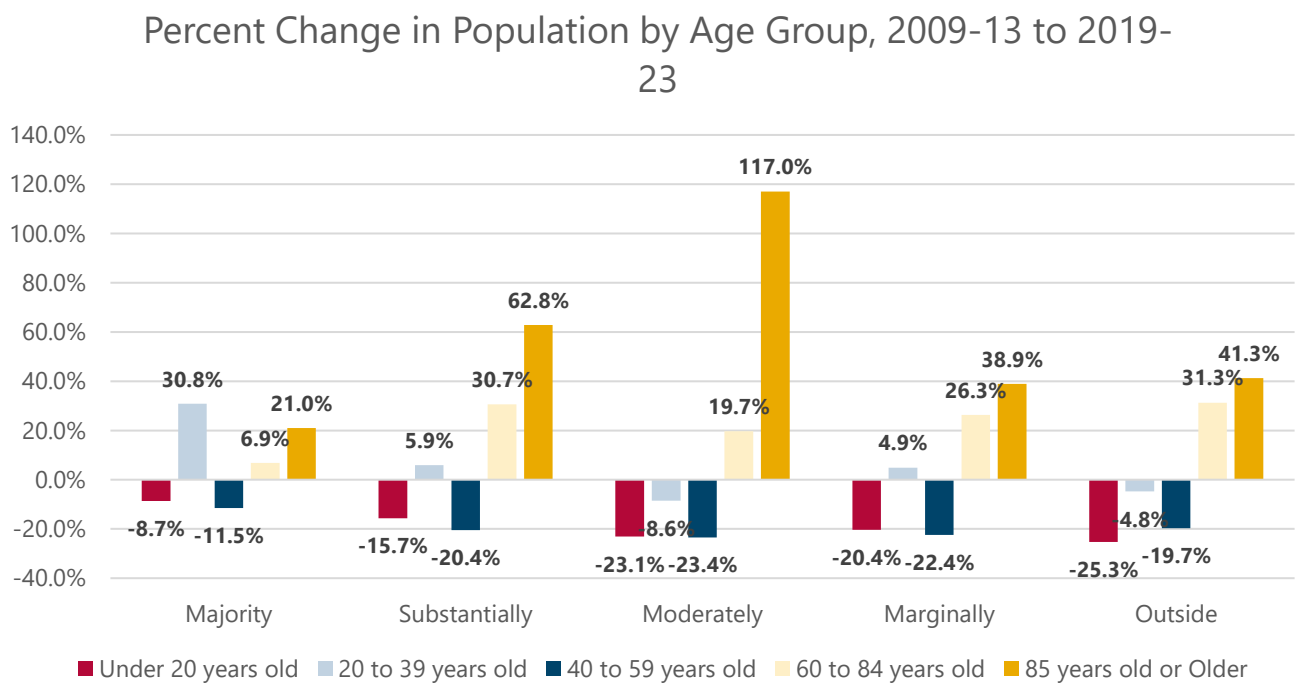
Change in Total Population



Source: US Census Bureau, 2024

Towns outside the Watershed had the largest average decrease in total population of all town groups, dropping more than 3% from 2010 to 2024.

Change in Population by Age Group



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

All town groups in the Watershed experienced a decline in the under 20 years old population (with towns Moderately in the Watershed experiencing the largest decrease of 23.1% since 2009).

All town groups in the Watershed have been aging with increases in both the 60 to 84 and 85 years old or older groups. Towns Moderately in the Watershed experienced the greatest increase in 85 years old or older group (117%) while towns Substantially in the Watershed experienced the greatest increase in the 60 to 84 years old group (30.7%).

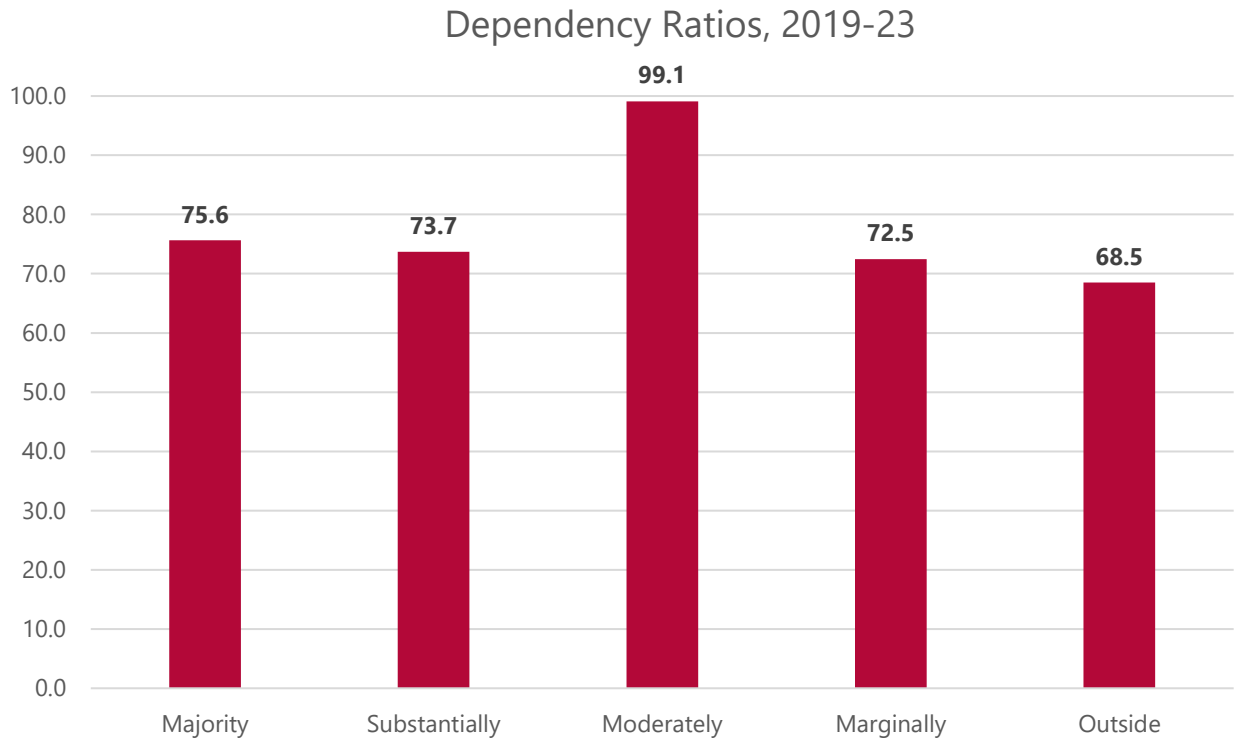
Towns outside the Watershed are similarly aging and had the highest growth in the 60-84 age group for all town groups (31.3%) and growth in the 85+ group at an increase of 41.3% since 2009. Town outside the Watershed also saw the largest decrease in the Under 20 population (25.3%) for all town groups.

Towns inside and outside the Watershed experienced population decreases in younger population and growth in senior communities, showing no clear difference between inside vs. outside the Watershed.

Dependency Ratios

As defined by the U.S. Census Bureau, the dependency ratio compares the number of dependents (people under 18 or over 64) to the working-age population (18–64), expressed as the number of dependents per 100 working-age people. The ratio provides an indication of

economic pressure, showing how many non-working-age individuals rely on the working population. A high ratio can strain resources, while a low ratio suggests more workers are available to support dependents.

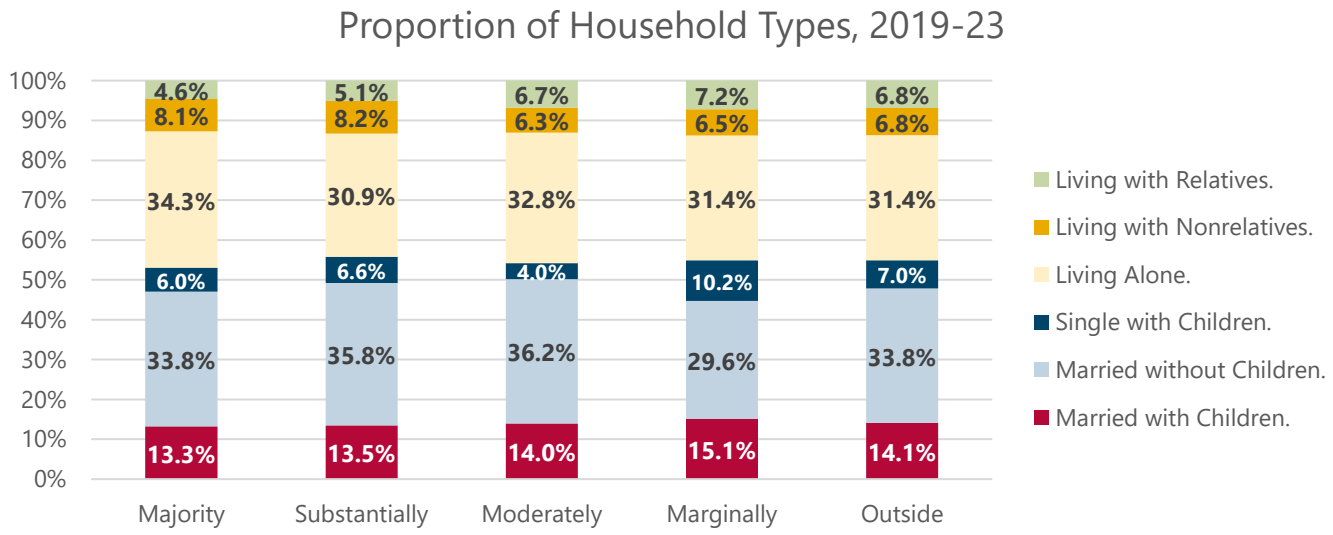


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Between 2019 and 2023, the average dependency ratio in the Watershed towns ranged from a low of 72.5 (Marginally) to a high of 99.1 (Moderately)

The dependency ratios for all towns inside the Watershed were higher than those towns outside the Watershed (68.5).

Household Types



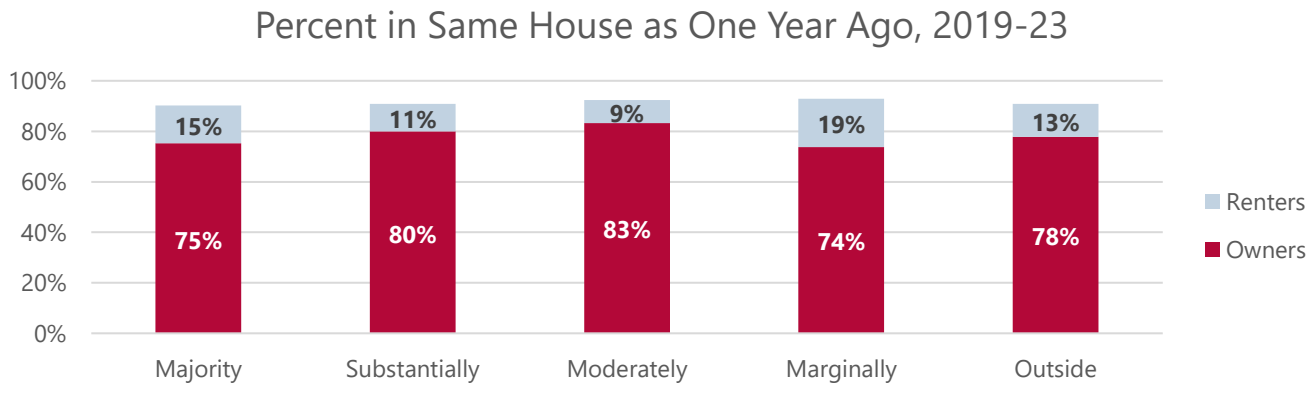
Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Between 2019 and 2023, there was little variation across the Watershed towns in household type, with the most common types being Married without Children and Living Alone and the least common being Single with Children and Living with Relatives. This is indicative of the trend noticed with a decrease in children in the Watershed.

Household types inside the Watershed and outside the Watershed had similar breakdowns for household types.

Same House as One Year Ago

This data shows the average percentage of householders who lived in the same house in 2019-23 (both renters and homeowners) as they did a year prior.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Towns inside and outside the Watershed show similar levels of householders in the same house as one year ago. Overall, the share of housing units that are occupied by the same householder as the previous year were generally very high across all town groups, ranging from 90% to 93%.

Business and Industry Vitality

Key Findings

- **Establishments by sector:**
  - In 2023, the largest economic sectors by number of establishments in Watershed counties were Retail Trade, Accommodation and Food Services, Construction, and Health Care and Social Assistance sectors.
  - In Control counties in 2023, the highest number of establishments were in Retail Trade, Accommodation and Food Services, Other Services (Except Public Administration), Health Care and Social Assistance, and Construction sectors.
  - Differences in the proportion of establishments by sector are minimal between Watershed and Control counties:
    - Control counties had slightly higher proportions of establishments in the Retail Trade, Health Care and Social Assistance, Other Services, and Manufacturing sectors.
    - Watershed counties had slightly higher proportions of establishments in the Construction, Real Estate and Rental Leasing, Professional and Technical Services, Administrative Support and Waste Management, and Accommodation and Food Services sectors.
- **Payrolled businesses by sector:**
  - The strongest sectors in terms of payrolled businesses in Control counties in 2024 were Food Services and Drinking Places, Professional, Scientific, and Technical Services, Specialty Trade Contractors, Unclassified Industries, and Administrative and Support Services.
    - These industries are similar to strong sectors in Watershed counties, suggesting that Watershed county location has little to no strong influence on types of payrolled businesses.
  - Changes in the number of payrolled businesses in Watershed counties between 2014 and 2024 indicated economic diversification, with the overall pattern of recorded payrolled businesses pointing to a transition from older, traditional industries toward service-oriented and creative sectors.
- **Establishment exit rate:**
  - Between 2012 and 2022, Watershed counties had a higher establishment exit rate than Control counties for all but three of the 11 years tracked: 2016, 2018, and 2019.

- Control counties saw the highest number of establishment exits in the Construction, Finance and Insurance, Real Estate and Rental Leasing, and Arts, Entertainment and Recreation sectors.
- Trends differ slightly in the Watershed counties where the highest number of establishment exits were seen in the Administrative and Support and Waste Management and Remediation Services, Construction, Arts, Entertainment and Recreation, and Professional, Scientific and Technical Services sectors.

- **Business startups:**
  - Watershed counties had higher levels of establishment entry rates between 2012 and 2022, with new businesses in the Watershed hovering about 1-3 percentage points above Control counties. The sectors with the highest establishment entry rates between 2012 and 2022 included Finance and Insurance, Administrative and Support and Waste Management Services, and Transportation and Warehousing.
    - Taken with the higher rates of establishment exits in Watershed counties, these trends could point to a less stable economic environment in Watershed counties, with implications for both local economies and regional market health.
  - The most notable difference in business startups between Watershed and Control counties was in the Agriculture, Forestry, Fishing, and Hunting Sector which saw higher growth in Control counties in 2022.

- **Average wage:**
  - In 2023, the average yearly wage in Watershed counties was $59,513 (adjusted for inflation) which was well above the required livable wage for one adult with no children in Watershed counties ($48,735). This was slightly higher than the average wage in Control counties of $50,820, which was also above the required livable wage for one adult with no children in Control counties ($46,733).
  - In 2023, both Watershed and Control counties had the highest wages in the Utilities sector, with both areas having an average wage of over $130,000 in this sector.
  - In 2023, the sectors with the highest wage in Watershed counties included the Utilities, Finance and Insurance, Mining, Quarrying, and Oil and Gas Extraction, and Construction sectors.
  - In 2023, some industries had higher average wages in the Watershed counties and some industries had higher average wages in the Control counties, indicating that it appears there is not a consistently higher average wage in either county group.

- **Percent of jobs with livable wage:** Overall, Watershed counties performed much better in terms of providing jobs that are at or above the livable minimum wage. Over 52% of jobs in

Watershed counties paid above the minimum livable wage whereas under 41% of jobs in Control counties paid above the minimum livable wage[7].

- However, the sectors that employed the highest proportion of people and had the highest number of businesses in the Watershed counties were also among the lowest-paid positions. See "Average Wage" key findings and analysis section (above) for top sectors and wages.
- In Watershed counties, the required annual income (pre-tax) to constitute a livable wage in 2025 for one adult with no children was $48,735. In Control counties it was $46,733.

- **Cost of living index (COLI):** Watershed and Control counties ranked similarly in COLI data, which showed that prices for basic goods and services in Watershed and Control counties were higher than in the rest of the region.
- **Agricultural lands analysis:**
  - The Watershed counties had less total land in Agricultural Districts compared to Control counties pre-2020.
  - Post-2020, the Watershed counties still had less land in Agricultural Districts, but increased acreage in Agricultural Districts by about 8,668 acres (an increase from 20.7% to 21% of total land in the Watershed counties) while Control counties experienced a loss of nearly 16,000 acres (a decrease from 42.5% to 41.5% of total land in the Control counties in the same time period).
  - For the land in the Watershed (i.e. land inside of the NYCDEP Watershed boundary area), approximately 185,199 acres of land fell in a designated Agricultural Districts pre-2020 (about 18.3% of the Watershed's total land area). Post-2020, Designated Agricultural land increased to about 188,393 acres (18.6% of the Watershed's total land area).
  - In Watershed counties, about 53% of the land area falls into the eligible agricultural land category. This is a significant amount of land area, most of it concentrated in Delaware County, a highly agricultural county.
  - In Control counties, about 40% of the land area falls into the eligible agricultural land category, coming in well below that of the Watershed counties.
  - The Control counties had a higher total market value of agricultural products sold by acre than the Watershed counties: $341 per acre for Watershed counties versus $359 per acre for Control counties.

[7] Data limitation: This metric may be influenced by residents who work remotely (i.e., higher-wage individuals employed by larger urban employers but that live outside cities); if calculated from resident earnings (or mixed sources), it can overstate access to livable-wage jobs in the Watershed because pay reflects external labor markets rather than local establishments. If derived from establishment-based (workplace) data, this bias is reduced. This metric should be interpreted with caution and, where feasible, should be paired with a resident-based view and sensitivity checks (e.g., data excluding telework-intensive sectors).

- The Watershed counties had a higher total market value of agricultural products per acre of farmland than the Control counties: $3,831 per acre of farmland in Watershed counties versus $1,047 per of farmland in Control counties.
- Interestingly, both the aggregate of Watershed and Control counties had an average market value of land and buildings on farms of $1.54 per acre, indicating that – since the Control counties have more acres of farmland than Watershed counties – the overall total market value of farmland in Control counties is greater than that in Watershed counties, even though the price per acre is identical.
- The Watershed counties had a significantly higher estimated value of agricultural real estate than the Control counties: $72.67 in land and buildings on farms per acre of farmland versus $22.26 in land and buildings on farms per acre of farmland.

Establishments by Sector

Note on Analysis

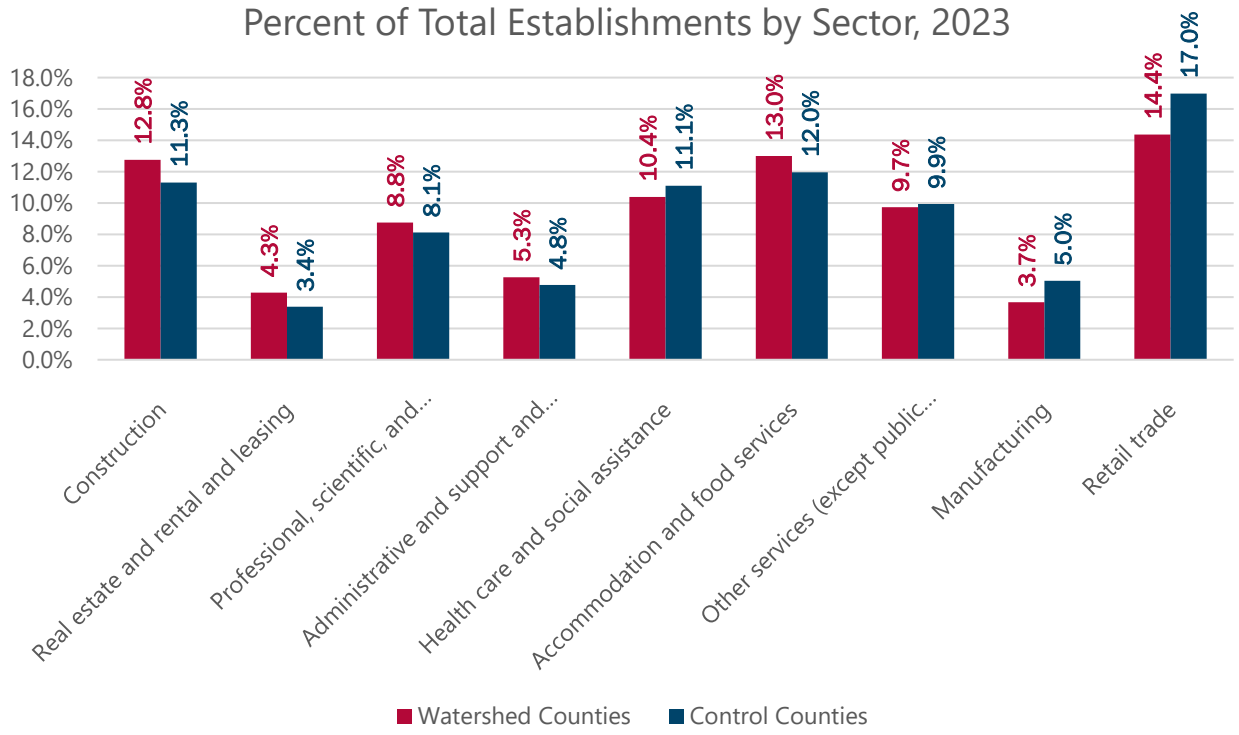
This write-up refers to trends in both establishments and businesses. These are two different metrics included in the New York State Department of Labor's Quarterly Census of Employment and Wages (QCEW) data, U.S. Census County Business Patterns (CBP) data, and U.S. Census Business Dynamics Statistics Program (BDS) data:

- An *establishment* is a single physical location where business activities occur. It represents a discrete workplace or facility engaged in one predominant economic activity. The above data sources are fundamentally establishment-based, meaning data such as employment and wages are collected and reported at this level to ensure accurate geographic and industry classification. For multi-location companies, each site is counted as a separate establishment to reflect local business activity.
- A *business* may consist of one or multiple establishments (locations) under common ownership or control. While the QCEW, CBP, and BDS can aggregate data at the firm level based on employer identification numbers (EINs), it primarily focuses on establishments for detailed reporting because firms can operate across various industries and geographies.

Examining the number of establishments by sector provides insights into the region's economic structure, competitiveness, and growth potential. It shows which industries are more prominent and serve as the foundation of the area's economy. If certain sectors are underrepresented, it may signal opportunities for new establishments or investments in those areas. Sectors with a high concentration of establishments may indicate new businesses struggle to enter due to competition.

In Watershed counties, the Retail Trade, Accommodation and Food Services, Construction, and Health Care and Social Assistance sectors had the greatest number of establishments in 2023. This points to a market focused on providing services rather than directly producing goods. For Control counties, the highest number of establishments in 2023 were in the Retail Trade, Accommodation and Food Services, Other Services (Except Public Administration), Health Care and Social Assistance, and Construction sectors.

Differences in the proportion of establishments by sector are minimal between Watershed and Control counties. Control counties had slightly higher proportions of establishments in the Retail Trade, Health Care and Social Assistance, Other Services, and Manufacturing sectors. Watershed counties had a slightly higher proportion of establishments in the Construction, Real Estate and Rental Leasing, Professional and Technical Services, Administrative Support and Waste Management, and Accommodation and Food Services sectors.

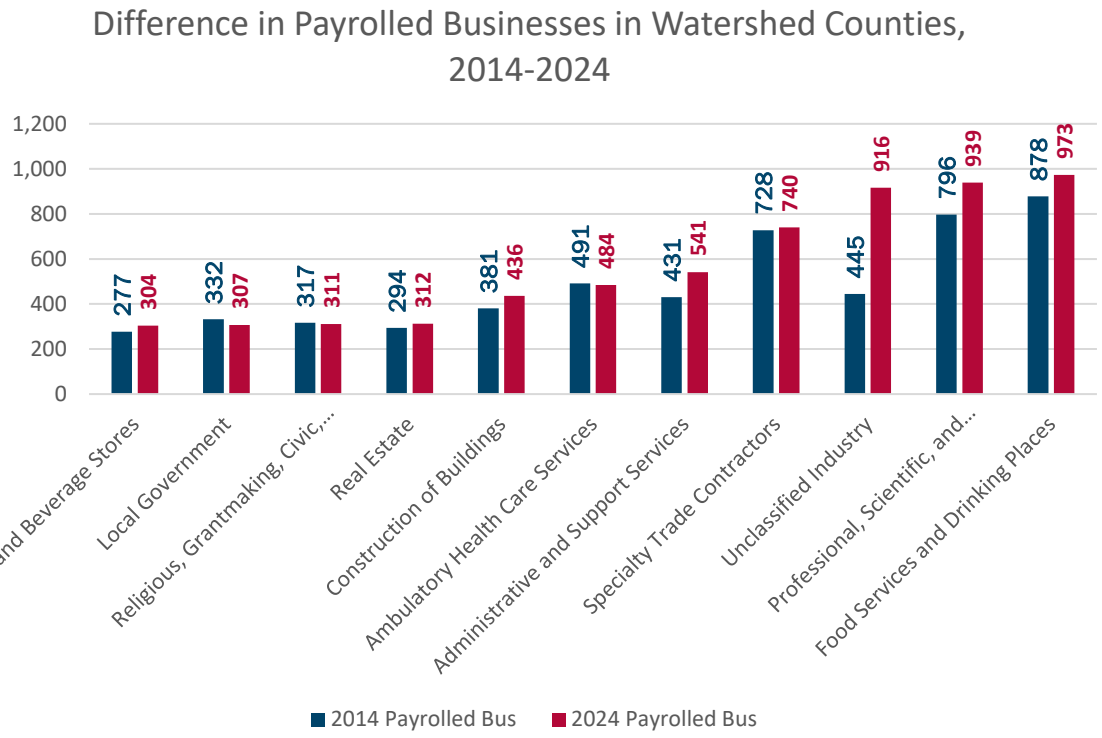


Source: US Census County Business Patterns (CBP), 2023

Payrolled Businesses by Sector

A change in the number of payrolled businesses – those with employees on payroll – serves as a key indicator of the health and trajectory of a local economy. This metric reflects both the capacity of existing businesses to sustain employment and the ability of new enterprises to form and hire workers. An increase in payrolled businesses typically signals economic expansion. It suggests that more businesses are being established, existing businesses are growing, and employers are confident enough in future demand to hire staff. A decline in the number of payrolled businesses often points to economic challenges. This may be due to business closures, downsizing, or a lack of new business formation. Fewer payrolled businesses mean lower employment levels, reduced aggregate income, and weaker consumer spending.

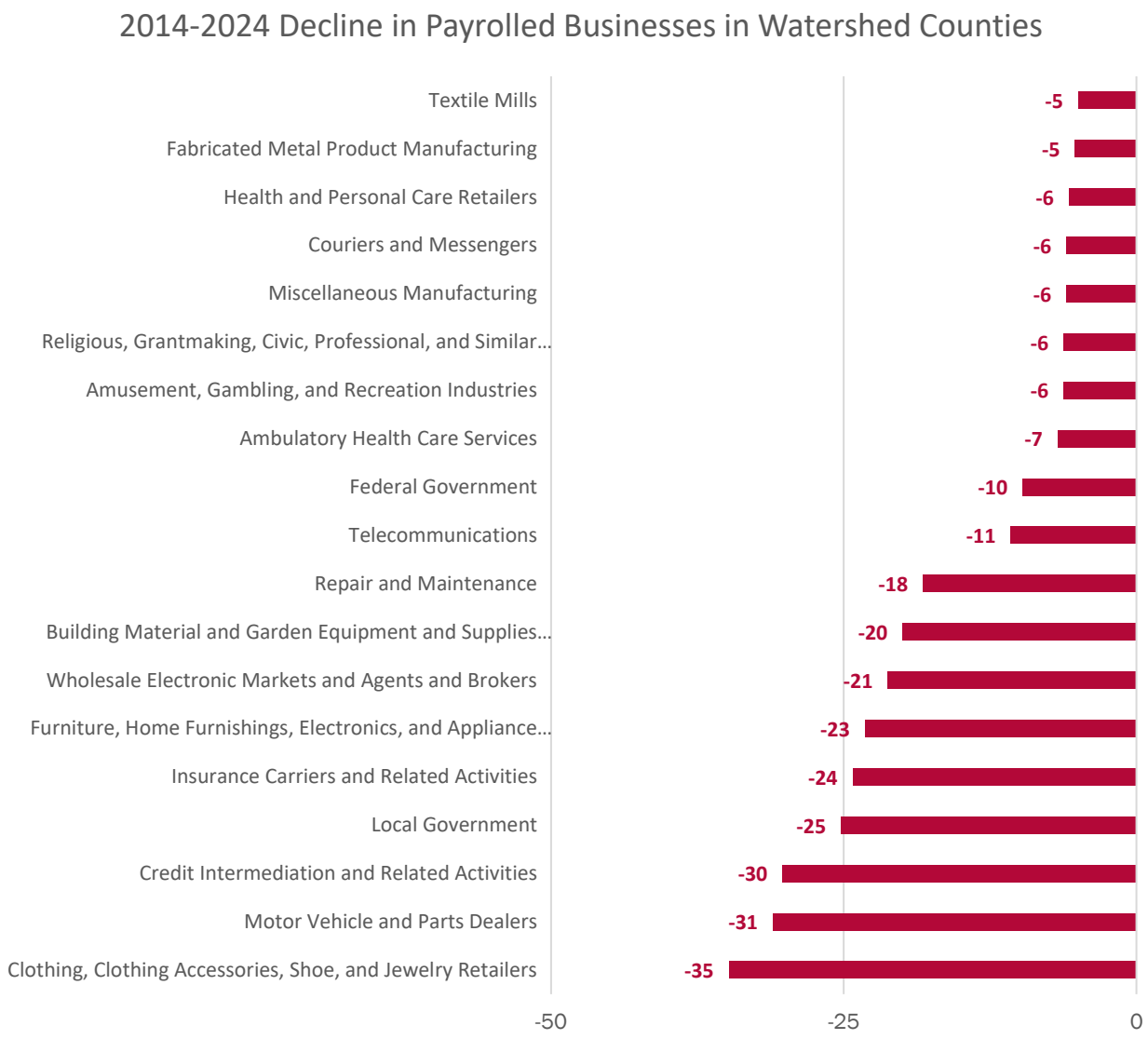
In Watershed counties, the largest increases in the number of payrolled businesses between 2014 and 2024 were in the Unclassified Industry[8] (+471 payrolled businesses), Professional, Scientific, and Technical Services (+143 payrolled businesses), and Administrative and Support Services (+110 payrolled businesses). Most of these industries are service-based and provide essential support or specialized services to other businesses or directly to consumers.



Source: Lightcast, 2025

[8] According to Lightcast, "Unclassified Industry" is used by Quarterly Census of Employment and Wages to categorize businesses who did not report a North American Industry Classification System (NAICS) code. These are primarily businesses that are newer and have not yet determined their proper NAICS code.

Watershed counties saw the largest drop in payrolled businesses in the Clothing, Clothing Accessories, Shoe, and Jewelry Stores (-35 payrolled businesses), Motor Vehicles and Parts Dealers (-31 payrolled businesses), and Credit Intermediation and Related Activities sectors (-30 payrolled businesses).



Source: Lightcast, 2025

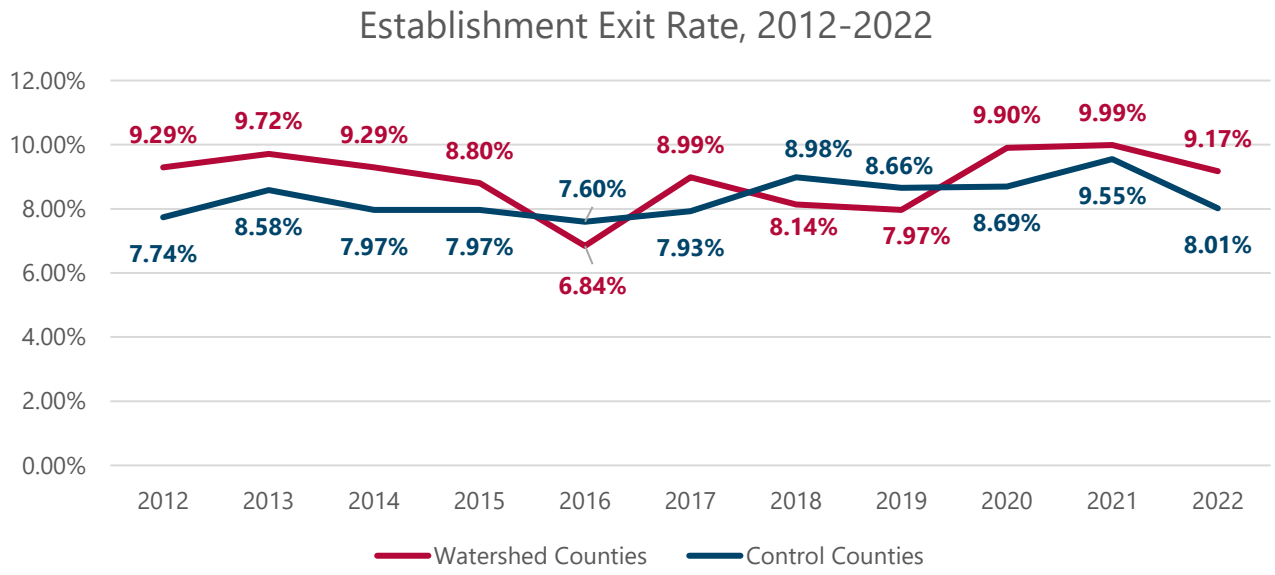
These trends indicate a diversifying economy in Watershed counties, with new opportunities emerging outside of traditional retail and repair sectors. The decline in various retail sectors and repair services suggests shifting consumer preferences, possibly due to the prevalence of e-commerce, changing demographics, or broader economic trends impacting small retailers. The overall pattern of recorded payrolled businesses points to a transition from older, traditional industries toward service-oriented and creative sectors.

The strongest sectors in terms of payrolled businesses in Control counties in 2024 were Food Services and Drinking Places, Professional, Scientific, and Technical Services, Specialty Trade Contractors, Unclassified Industries, and Administrative and Support Services. These industries are similar to strong sectors in Watershed counties, suggesting that Watershed location has little to no strong influence on types of business establishments.

Establishment Exits

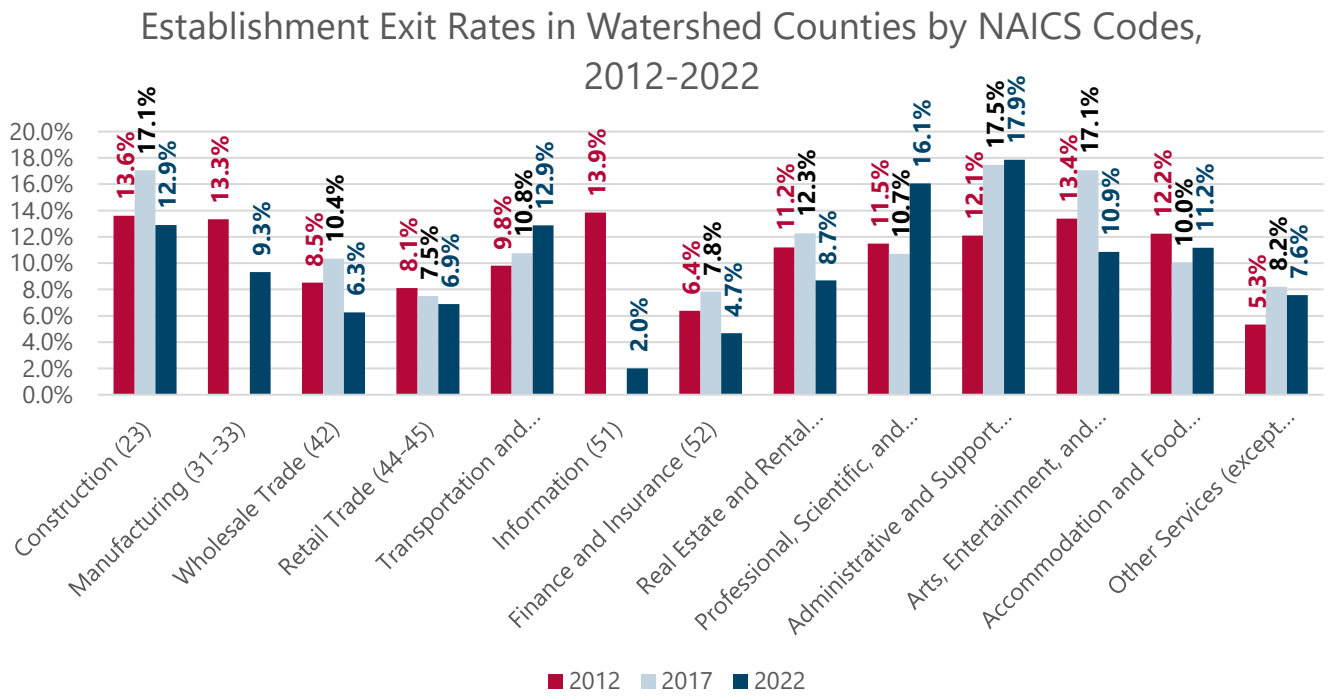
Alongside sector-based trends, establishment exits in a market can indicate the relative health and stability of the local economy. The most recent data available at the County level is provided by the U.S. Census Bureau's Business Dynamics Statistics (BDS) program. This dataset pulls high-level employment data by NAICS Code to identify trends in job creation and destruction, establishment entry and exit, and overall rates of net growth or shrinkage. Notably, this data only provides information for a limited number of NAICS Codes which may limit the viability of specific data measures compared to the identification of overall market-wide trends.

Watershed counties had a higher exit rate than Control counties for all but three of the 11 years tracked: 2016, 2018, and 2019.



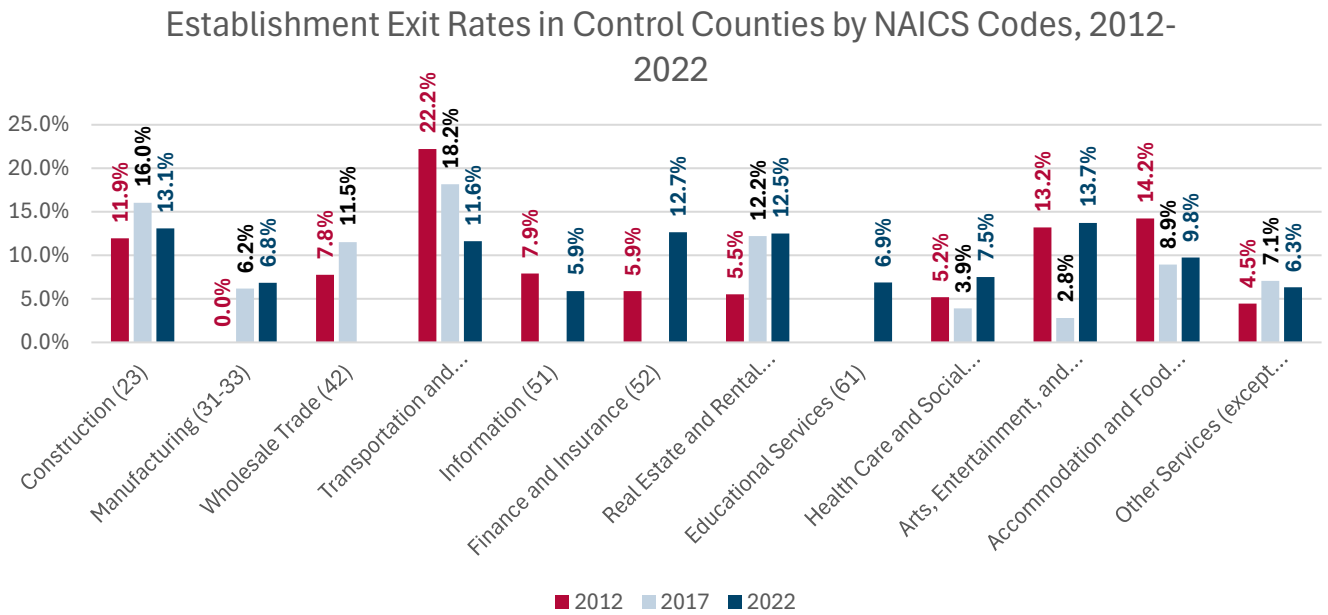
Source: Business Dynamics Statistics Program (BDS), US Census Bureau, 2022

Looking closer at the trends by NAICS code, Watershed counties experienced accelerated establishment exits in several sectors by 2022, especially in those most vulnerable to economic cycles and environmental events (Construction, Transportation and Warehousing). Essential services (utilities, healthcare, education) remained resilient, while discretionary and service sectors saw dramatic increases in exits, particularly amid the COVID-19 pandemic.



Source: Business Dynamics Statistics Program (BDS), US Census Bureau, 2022

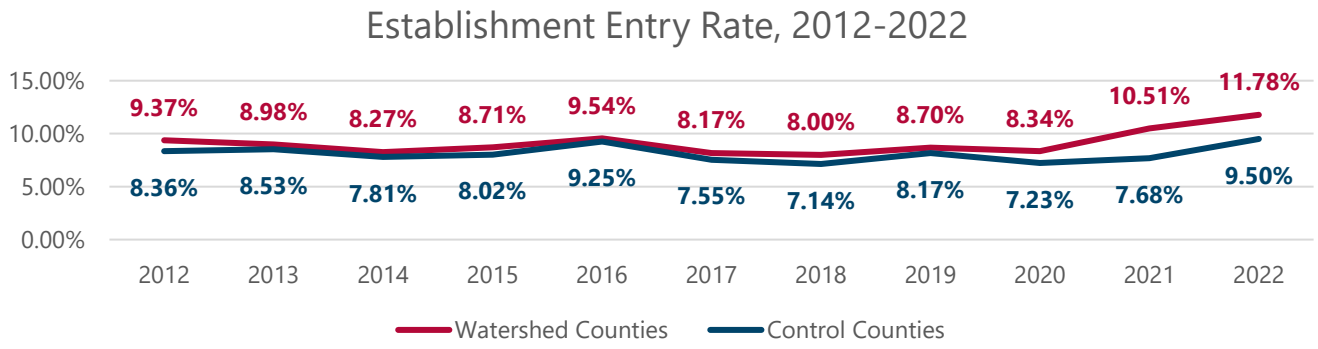
Comparatively, Control counties saw the highest number of establishment exits in the Construction, Finance and Insurance, Real Estate and Rental Leasing, and Arts, Entertainment and Recreation sectors. These trends differ slightly from Watershed counties and indicate more volatility in the professional, service-based sectors in Control counties.



Source: Business Dynamics Statistics Program (BDS), US Census Bureau, 2022

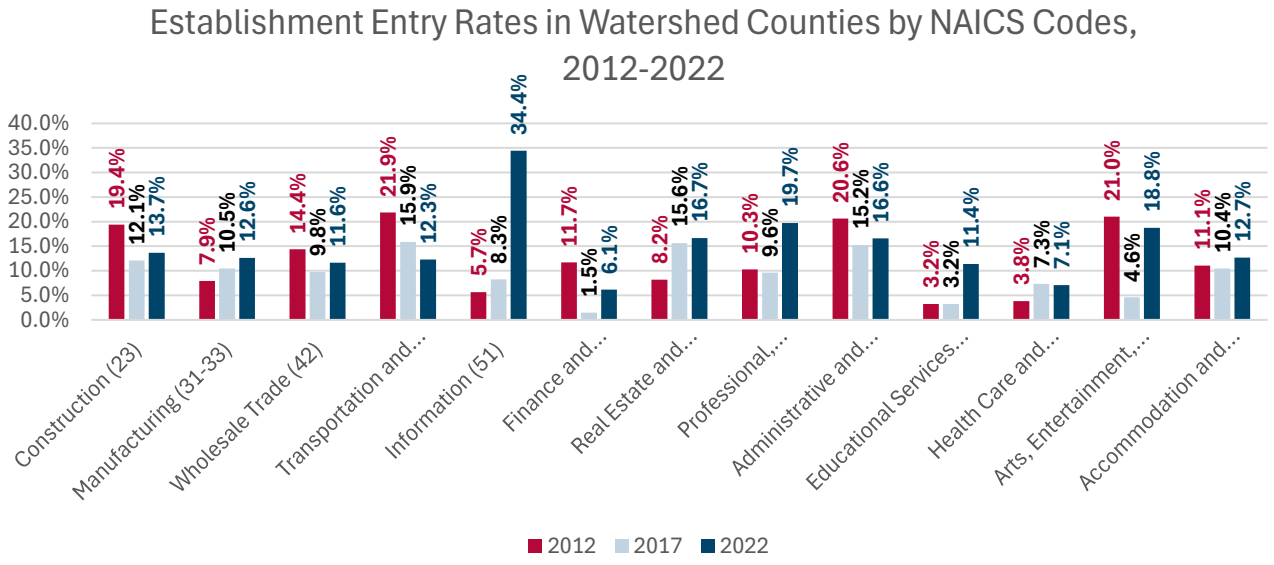
Total Number of New Business Startups

Watershed counties had higher levels of establishment entry rates between 2012 and 2022, with new businesses in the Watershed hovering about 1-3 percentage points above Control counties. Taken with the higher rates of establishment exits in Watershed counties, these trends could point to a less stable economic environment, with implications for both local economies and regional market health.



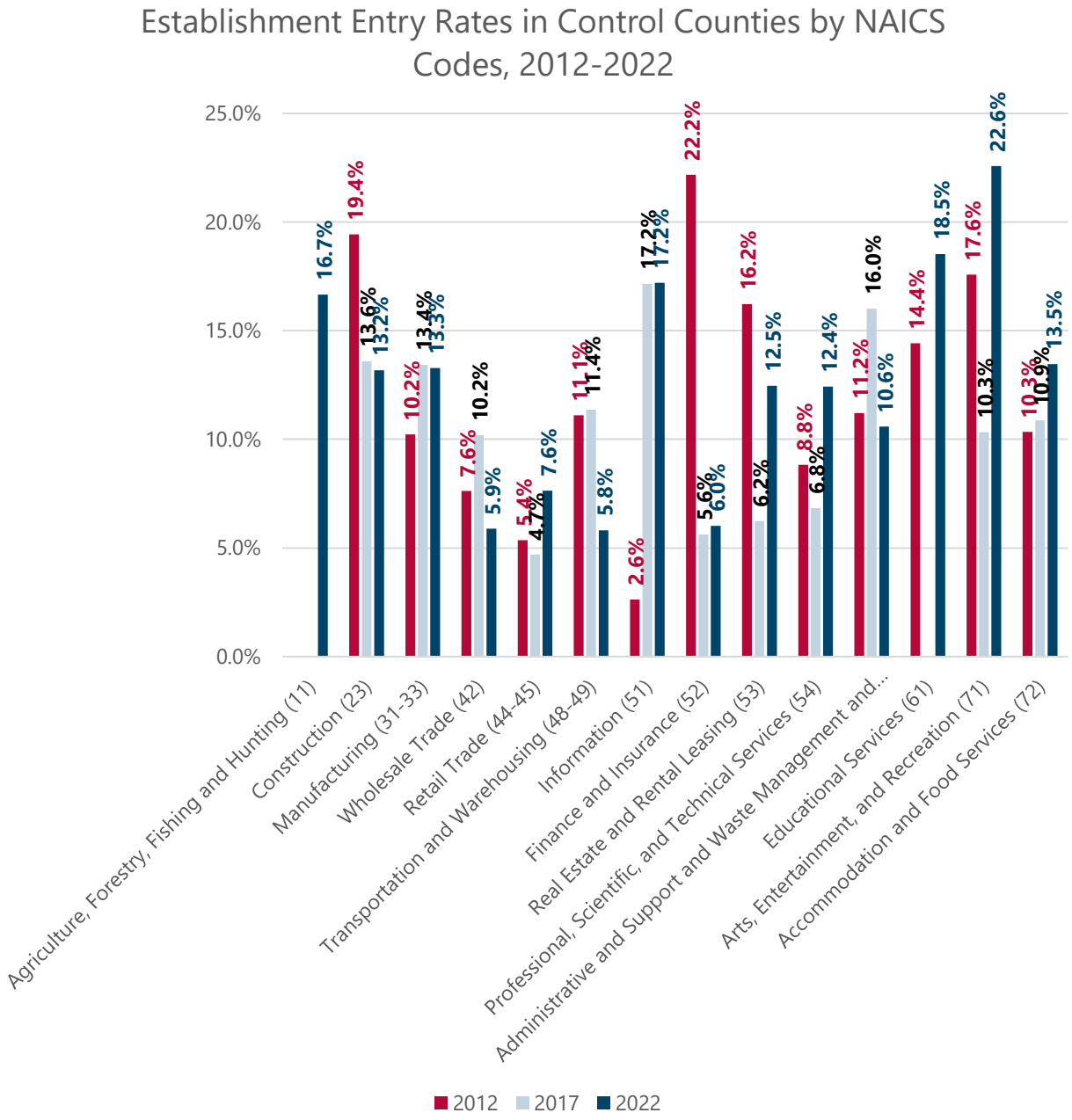
Source: Business Dynamics Statistics Program (BDS), US Census Bureau, 2022

In Watershed counties, the sector that showed the most dramatic growth in new establishment entry by 2022 was the Information sector. Service industries, especially Professional, Scientific and Technical Services and the Accommodation and the Arts, Entertainment, and Recreation sector also saw major upticks. Health, Education, and Other Services remained steady but low in terms of new business startups. The general direction for 2022 was upward for almost all sectors compared to 2017, possibly reflecting economic recovery, changing business environments, or new sector opportunities.



Source: Business Dynamics Statistics Program (BDS), US Census Bureau, 2022

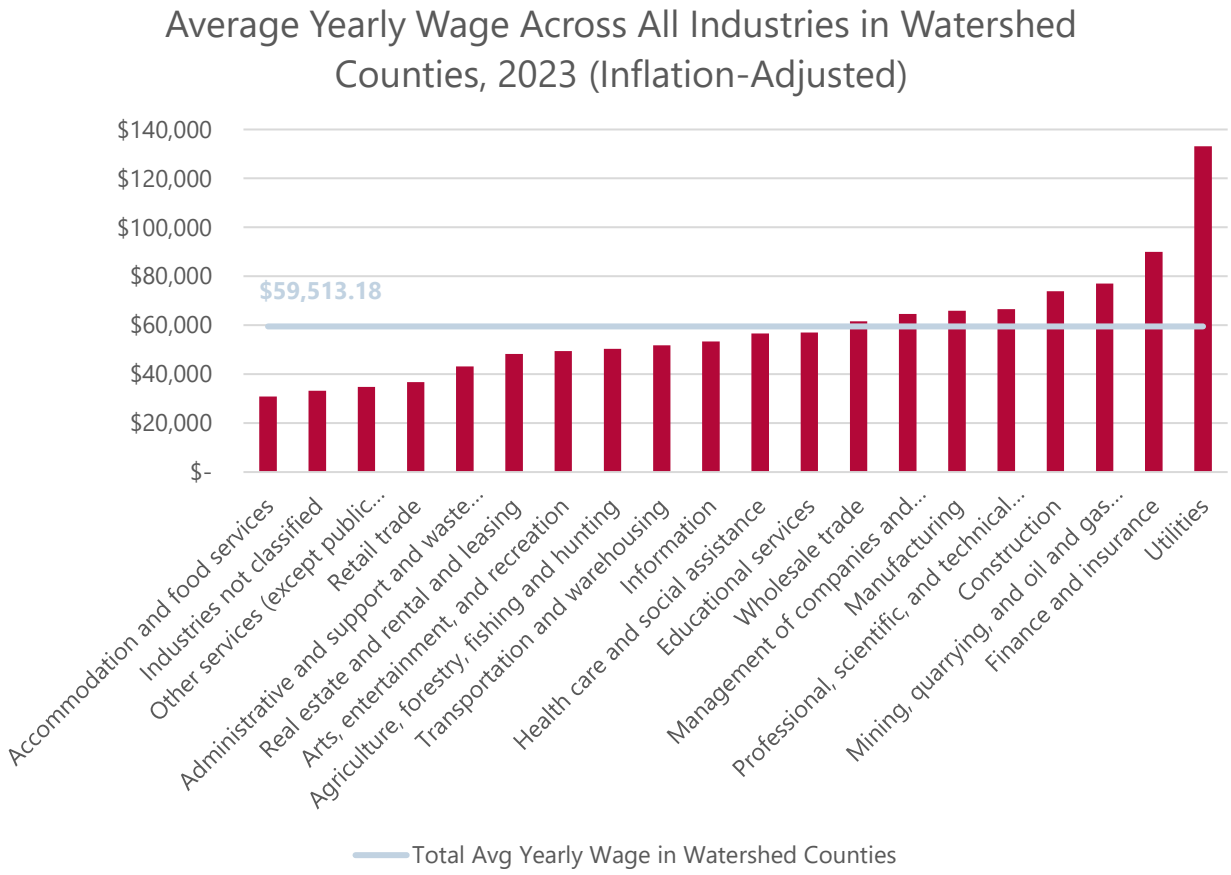
The most notable difference in business startups between Watershed and Control counties was in the Agriculture, Forestry, Fishing, and Hunting Sector which saw higher growth in Control counties in 2022. Other differences were in the Arts, Entertainment, and Recreation, Educational Services, Finance and Insurance, and Construction sectors, indicating two different economies that offer different goods, services, and business opportunities.



Source: Business Dynamics Statistics Program (BDS), US Census Bureau, 2022

Average Wage

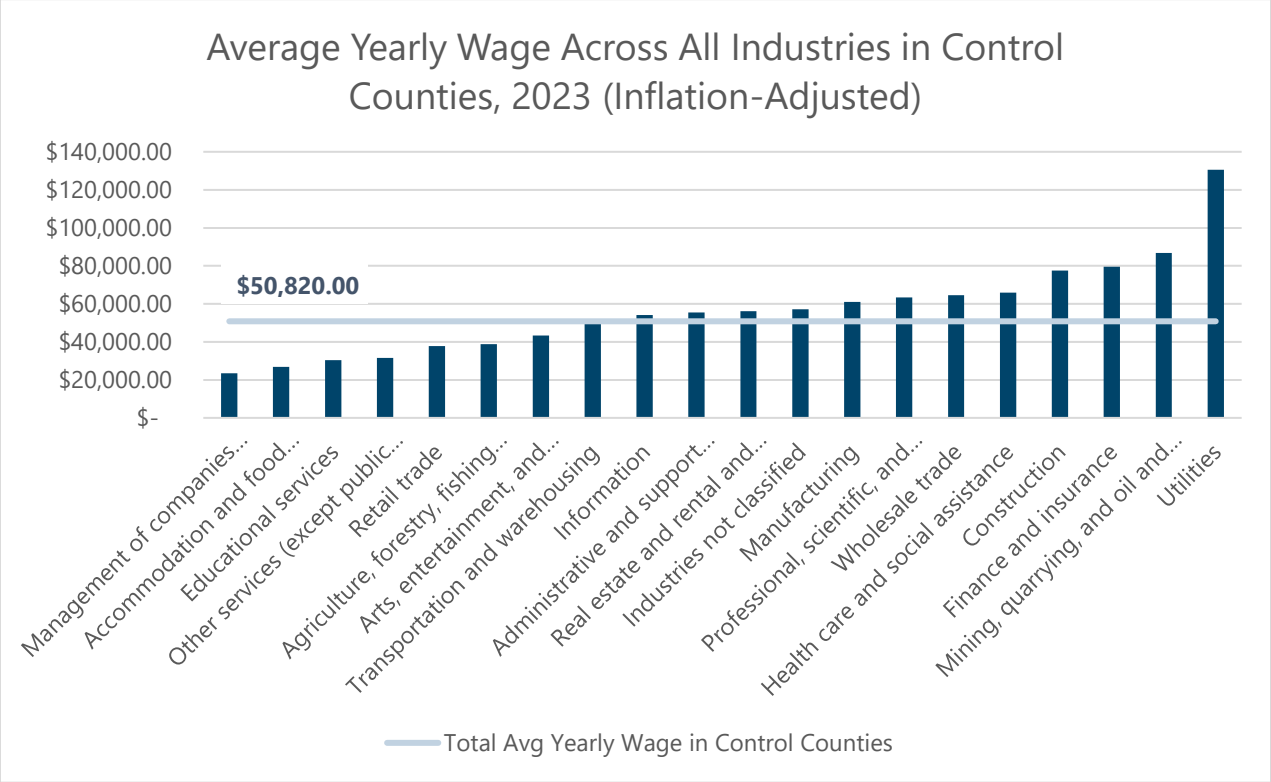
In 2023, the average yearly wage in Watershed counties was $59,513[9]. This average wage was well above the required livable wage for one adult with no children in Watershed counties ($48,735). Both Watershed and Control counties had the highest wages in the Utilities sector, with both county areas having an average wage of over $130,000. The sectors that had higher yearly wages in the Watershed than in Control counties included Accommodation and Food Services (+$4,036), Arts, Entertainment, and Recreation (+$6,169), Agriculture, Forestry, Fishing, and Hunting (+$11,695), Transportation and Warehousing (+$2,372), Educational Services (+$26,700), Management of Companies and Enterprises (+$41,069), Manufacturing (+$4,904), Finance and Insurance (+$10,458), and Utilities (+$2,556).



Source: US Census County Business Patterns (CBP), 2023

[9] This report de-emphasizes "remote" status workers and their potential impact on the metric. However, pandemic-era in-migration of higher-paid remote workers likely raised resident-based wage indicators without comparable gains for local, on-site workers. Interpret wage and "Percent Livable Wage Jobs" metrics alongside establishment-based (workplace) wages and distributional statistics (medians/percentiles); a deeper cut isolating telework-intensive sectors or excluding remote workers could be considered for future research.

In 2023, Control counties had an average yearly wage of $50,820 (inflation adjusted) – almost $10,000 less than the average yearly wage in Watershed counties. This was about $4,000 above the required livable wage for one adult with no children in Control counties ($46,733). Sectors in Control counties that had a higher average wage than counties in the Watershed were Unclassified industries (+$23,964), Administrative and Support and Waste Management Services (+$12,415), Real Estate and Rental Leasing (+$7,943), Information (+$729), Health Care and Social Assistance (+$4,295), Wholesale Trade (+$2,971), Construction (+$3,619), and Mining, Quarrying, Oil, and Gas Extraction (+$9,833).



Source: US Census County Business Patterns (CBP), 2023

Percent Livable Wage Jobs

Calculating the percentage of jobs in a certain area that pay a livable wage means determining what share of all jobs offer wages at or above the minimum income level required for workers to afford necessities like housing, food, healthcare, and transportation. Livable wage thresholds vary by location and family size, but generally represent the income needed to maintain a minimum standard of living.

County	% of jobs at or above livable minimum wage[10]
Delaware	60.1%
Greene	44.9%
Schoharie	51.8%
Sullivan	49.8%
Ulster	55.0%
Chenango	42.5%
Columbia	36.4%
Otsego	46.0%

Source: Calculations by CGR Consulting Team, data retrieved from NYS Department of Labor (DOL) Quarterly Census of Employment and Wages.

In Watershed counties, the required annual income (pre-tax) to constitute a livable wage in 2025 for one adult with no children was $48,735. In Control counties it was $46,733.

Overall, Watershed counties performed much better in terms of providing jobs that are at or above the livable minimum wage. Over 52% of jobs in Watershed counties paid above the minimum livable wage whereas under 41% of jobs in Control counties paid a livable wage.

In Watershed counties, the sectors that provided a livable wage to employees were Engineering and Construction, Government, Health Care, and Technical Services. Those sectors that paid below the livable wage rate included Crop Production, Food Services and Drinking Places, and Clothing and Accessories stores. The split between these categories reflects the white-to-blue collar separation of positions that tend to pay hourly and those that are salaried.

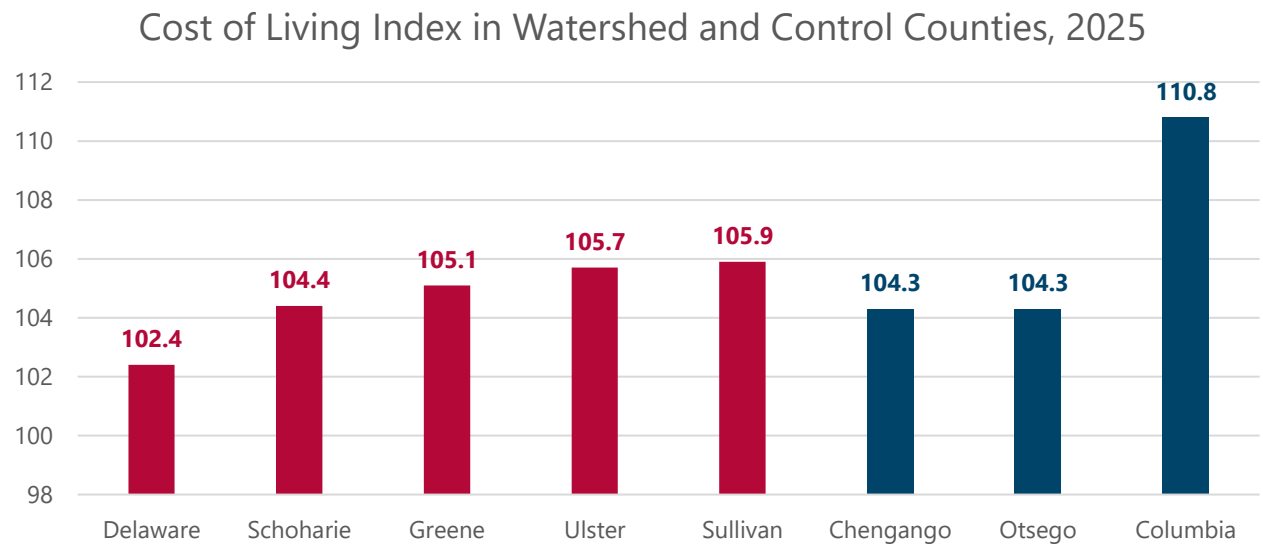
[10] The livable wage rate in the following section is referring to the required annual income to meet the estimated livable wage for a single person with no children.

Livable wage jobs in Control counties tended to fall into the Finance and Insurance, Utilities, Insurance Carriers, and Telecommunications sectors while those below the livable wage were concentrated in Transportation, Manufacturing, Motor Vehicles and Parts Dealers, and Repair and Maintenance sectors. This split mirrors the one in observed in Watershed counties between blue- and white-collar jobs.

Cost of Living Index

Another way to measure the health of a local job market is through cost-of-living indices. This analysis utilized the Council for Community and Economic Research's Cost of Living Index (COLI). COLI is the only local level cost of living index for the U.S. The index compiles specific commodities and services that represent broad categories of consumer expenditures and weighs the relative prices of these items to reflect spending patterns typical of professional and managerial households in the top income quintile. Overall, the index shows relative price levels in participating areas at a given point in in time.

In the COLI, the base with which each area is compared is the average for all participating areas. For example, if two areas have indexes of 115.0 and 90.0, their respective mid-management living costs are 115% and 90% of the average for all areas participating in that quarter, which means that the former's costs are 15% above the average for all participating while the latter's are 10% below the average.[11]



Source: Council for Community and Economic Research via Lightcast, 2025

For Watershed and Control counties, the cost of living was above the average in the surrounding Metropolitan Statistical Areas (MSAs). Watershed and Control counties ranked

[11] For more information on the methodology behind COLI, see here: https://www.coli.org/wp-content/uploads/sites/3/2017/12/2018-COLI-Manual.pdf

similarly in COLI data, which shows that prices for basic goods and services in Watershed and Control counties were higher than in the rest of the region.

Agricultural Lands Analysis

Identifying the amount of agricultural land within the Watershed informs the analysis of overall community vitality by providing key insights on land use, economic activity, environmental stewardship, and development pressures on the region. Agriculture is a foundational economic sector in the Watershed counties, contributing to the local economy through farming, employment, and associated agri-business. Maintaining or expanding agricultural district land helps control sprawl, limits conversion of open space to residential or commercial uses and helps sustain traditional land use patterns critical to the sustainability of community vitality and water quality in the Watershed.[12]

Maps for the Agricultural Lands Analysis can be found at the end of this section.

Land in Agricultural Districts

Having land in an Agricultural District in New York means the land is a part of a designated geographic area predominantly consisting of viable agricultural land, where farming operations are given priority and certain protections to promote continued agricultural use and preserve farmland are enforced. Land in Agricultural Districts often reflects rural character and land use patterns supportive of natural resource conservation, including water quality and habitat protection in the Watershed. A balance between agricultural land and available developable land is key to maintaining community vitality in the Watershed. Conversely, loss of agricultural land through conversion to development or other uses can indicate pressure on open space and increased fragmentation signaling potential challenges to long-term community vitality.[13]

Another measure of agricultural land inside and outside the Watershed is determining what parcels are within an Agricultural Exemption District. For a parcel to be in an Agricultural Exemption District, the primary permitted use of the land must be for agricultural purposes. This zoning is intended to preserve farmland, limit non-agricultural development, and reduce regulatory burdens that could make farming more difficult and costly.

Although these land designations (Agricultural Exemption Districts and NYS Agricultural Designation) are related, they operate independently. Zoning districts – used to determine Agricultural Exemption – are local and codified in municipal law, while Agricultural Districts are created at the county level and certified by the NYS Department of Agricultural and Markets. A

[12] For additional information on this topic, an example text is provided here: *https://crcogct.gov/wp-content/uploads/2016/07/Ch02_FactSheet_AgLand.pdf) but in general, ag district designation does limit sprawl and land available for subdivision since no other use is allowed on the land – development, particularly housing development, does impact land and water quality.*

[13] For additional information on this topic, refer to the text above as well as: *https://ers.usda.gov/sites/default/files/_laserfiche/publications/41350/19078_aer803e_1_.pdf*

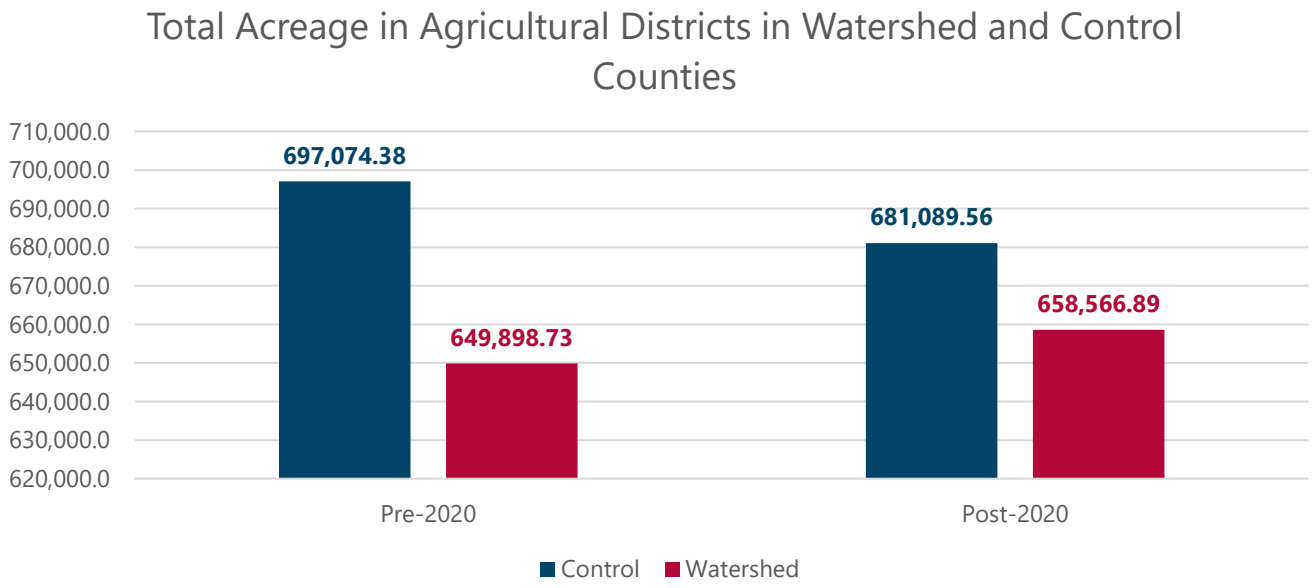
parcel can qualify for one, the other, or both programs depending on its location and use, with the strongest protections when both apply. Being in both districts maximizes agricultural use privileges; local zoning exemptions reduce regulatory friction, while NYS Agricultural Designation enrollment ensures legal protection, preferential tax treatment, and preservation incentives for sustained farming operations.

Watershed Counties versus Control Counties

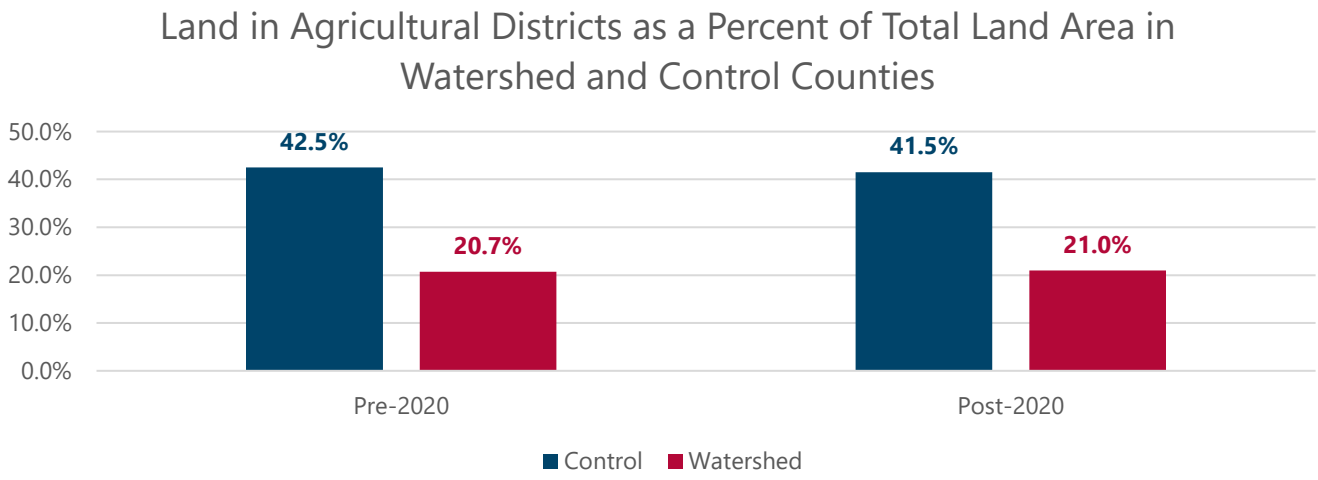
In the Watershed counties, data availability between 2013 and 2024 varied for land in designated Agricultural Exemption Districts, with gaps in some years. Control counties had data available from 2009 to 2024, also with gaps. For this reason, the data was compared on a pre- versus post-2020 basis to try and include as many years of data as possible in both groups. It should be noted that these data gaps make one-to-one comparison between the Watershed and Control counties difficult, but still valuable when looking at the impact of land uses at a high level.

Pre-2020, the Watershed counties had approximately 649,899 acres (20.7% of the total land area in the Watershed counties) of land in designated Agricultural Districts, while Control counties had approximately 697,074 acres of land (about 42.5% of the total land area in Control counties) in Agricultural Districts.

Post-2020, the Watershed counties had about 658,567 acres (about 21% of the total land area in the Watershed counties) of land in designated Agricultural Districts, showing an increase of 8,668 acres, while Control counties had approximately 681,090 acres of land (about 41.5% of the total land area in Control counties) in designated Agricultural Districts, showing a loss of about 15,985 acres.



Source: Cornell University Geospatial Information Repository



Source: Cornell University Geospatial Information Repository

Land Area Within the Watershed

For the land in the Watershed (i.e. land inside of the NYCDEP Watershed boundary area), approximately 185,199 acres of land fell in a designated Agricultural Districts pre-2020 (about 18.3% of the Watershed's total land area). Post-2020, Designated Agricultural land increased to about 188,393 acres (18.6% of the Watershed's total land area).

Implications to Data

The loss of nearly 16,000 acres of land in Agricultural Districts in Control counties reveals ongoing pressures for land use change, possibly driven by development, subdivision, or changing economic viability of farming. This signals more fragmentation of farmland and potential shifts toward suburbanization or other non-agricultural uses.[14]

The increase in acreage in land in Agricultural Districts in the Watershed counties (including inside the NYCDEP regulated Watershed boundary) points to active efforts or favorable conditions to preserve and expand agricultural areas. This trend indicates potential prioritization of farmland protection over development in the Watershed counties, likely supporting rural economic vitality and ecological stewardship.

These trends reflect a regional balance where the Watershed counties appear to be more successful or focused on farmland preservation. For the land in the Watershed boundary, the growth is likely influenced by Watershed protection programs, agricultural easements, or land acquisition initiatives designed to limit development that could impact water quality in the Watershed. Control counties experienced more land conversion pressures which may increase

[14] For additional sources/context, see sources in the provided footnotes in the Land in Agricultural Districts. section.

demands on infrastructure and services, alter community demographics, and affect environmental quality.

Eligible Agricultural Land

To be classified as eligible agricultural land, areas had to meet the following criteria:

- NYS Agricultural Districts
- Agricultural Exemption
- Land use codes for agriculture (100s and 241)
- Land cover classified as pasture/hay and cultivated crops

In Watershed counties, about 53% of the land area falls into the eligible agricultural land category. This is a significant amount of land area, most of it concentrated in Delaware County, a highly agricultural county. However, this does not mean that just because the land *could* be used for agricultural activities that it *should* be. In other words, even if land could be suitable for agriculture does not mean that it is the highest and best use for the area. Land uses are highly contextual and dependent on the conditions of local economies.

In Control counties, about 40% of the land area falls into the eligible agricultural land category, coming in well below that of the Watershed counties. This is likely due to higher development densities in Control counties, and large pre-existing agricultural activity in these areas.

Value of Agricultural Land

Determining the value of agricultural land and its changes over time infers critical information about community and economic vitality. Rising agricultural land values often reflect strong or improving economic conditions for farming and rural land uses. Higher land values can also signal increased demand for farmland – either from active agricultural production or from developers and second-home buyers seeking rural properties, both indicating economic activity. Increases in agricultural land values can also result from external pressures such as demand for residential or recreational development in rural areas, which can lead to farmland conversion, fragmentation, and changing community composition.

Conversely, declining or stagnant land values could indicate economic distress in farming, reduced profitability, or potential disinvestment in agriculture, suggesting weakening rural economies. Overall, monitoring agricultural land value trends help gauge the sustainability of farming as a way of life and economic livelihood.

Per Acre Metrics

The most common way to analyze agricultural land values is through the U.S. Department of Agriculture's (USDA) Agriculture Census. The Census is conducted every five years and estimates the value of farm real estate, cropland, and pastureland per acre. Data is collected through the USDA National Agricultural Statistics Service (NASS) which conducts an Agricultural Land and Technology Use survey annually. Land values include all farm real estate

(land and buildings) and are reported as average value per acre for various land types: cropland, pasture, irrigated or non-irrigated land. Estimates are created calculating weighted averages of value per acre using the ratio of total dollar values reported to acres of land, adjusted by sampling weights and accounting for farm area proportions within segments.

The 2022 USDA Census of Agriculture (most recently available) was used as the primary source of information for the comparison between Watershed and Control counties. The USDA Census of Agriculture's definition of a farm is any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year.

Because the size and number of Watershed counties is larger than the number of Control counties, analyzing the differences in agricultural production on a value per acre basis allows for a more accurate comparison.

	County	Total Market Value of Agricultural Products Sold by Acre (Total County Acreage)	Average Market Value of Agricultural Products Sold by Acre of Farmland	Estimated Market Value of Land and Buildings on Farms by Total County Acreage	Estimated Value of Land and Buildings on Farms by Acres of Land in Farms
Watershed Counties	Delaware	$71.08	$356.42	$0.72	$5.24
	Greene	$46.91	$2,209.45	$2.02	$28.23
	Schoharie	$62.47	$181.91	$1.91	$7.06
	Sullivan	$75.17	$426.44	$1.31	$14.23
	Ulster	$85.35	$656.30	$1.76	$17.90
Total: Watershed Counties		$340.98	$3,830.52	$7.72	$72.67
Average: Watershed Counties		$68.20	$766.10	$1.54	$14.53
Control Counties	Chenango	$65.28	$187.84	$0.98	$3.71
	Columbia	$131.00	$472.79	$2.82	$14.72
	Otsego	$162.33	$386.56	$0.83	$3.82

Total: Control Counties		$358.61	$1,047.19	$4.62	$22.26
Average: Control Counties		$119.54	$349.06	$1.54	$7.42

Source: U.S. Department of Agriculture Census of Agriculture (2022); Cornell University Geospatial Informational Repository

Market Value of Agricultural Products Per Acre

The total market value of agricultural products sold was divided by the total acreage within each county. The total market value of agricultural products sold by acre in Watershed counties was $341 per acre, with each county in the Watershed averaging $68 per acre in total value. Among the Watershed counties, Ulster County had the highest agricultural market value per acre ($85).

The Control counties had a higher total market value of agricultural products sold by acre than the Watershed counties at $359 per acre, with each Control county averaging $120 per acre in total value.

Market Value of Agricultural Products Per Acre of Farmland

The total market value of agricultural products sold was also divided by the total acreage of land within farms according to the 2022 USDA Census of Agriculture. Looking just at farmland, the total market value of agricultural products was $3,831 per acre of farmland in Watershed counties. Greene County had a very high market value per acre of farmland ($2,210).

Control counties had an average of $1,047 in market value of agricultural products per acre of farmland. The county with the highest average agricultural value in the Control counties was Columbia with $473 per acre of farmland.

Watershed counties outperformed Control counties in this measure.

Market Value of Land and Buildings Per Acre

The estimated market value of land and buildings (estimated real estate value) on farms was divided by the total acreage within each county. The total market value of land and buildings on farms in Watershed counties was $7.72 per acre. Greene County again had the highest market value of land and buildings per acre among Watershed counties ($2.02 per acre).

Control counties had an estimated total market value of land and buildings on farms of $4.62 per acre. Columbia also had the highest market value of land and buildings on farms at $2.82 per acre.

Interestingly, both the aggregate of Watershed and Control counties had an average market value of land and buildings on farms of $1.54 per acre, indicating that - since the Control counties have more acres of farmland than Watershed counties – the overall total market value of farmland in Control counties is greater than that in Watershed counties, even though the price per acre is identical.

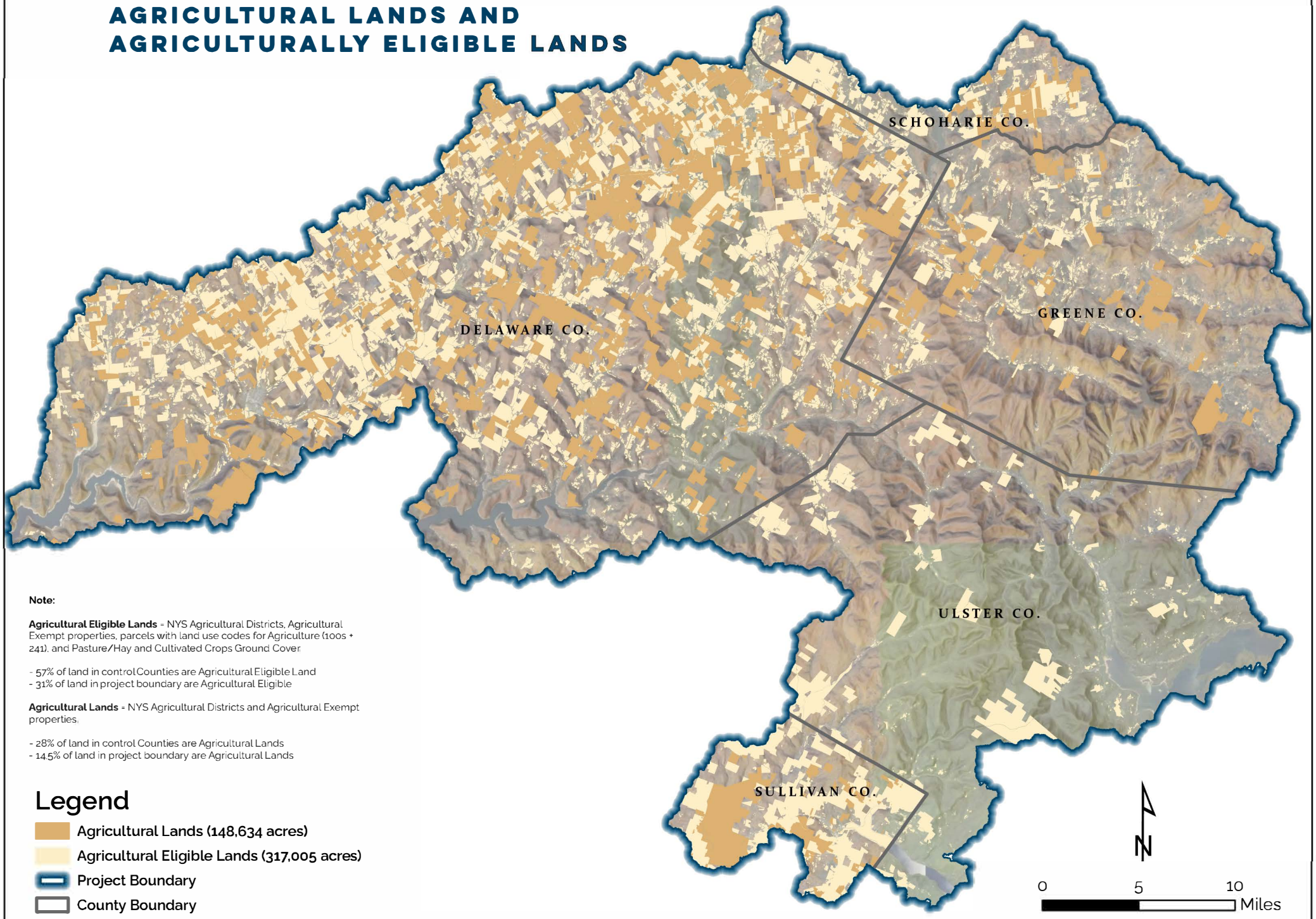
Market Value of Land and Buildings Per Acre of Farmland

The estimated market value of land and buildings (estimated real estate value) on farms was divided by the total acreage of land within farms. This results in a *market value of land and buildings per acre of farmland* metric. Watershed counties had an estimated value of $72.67 in land and buildings on farms per acre of farmland. Greene County outperformed all other counties (Watershed and Control) at a value of $28.23 per acre of farmland.

The total value of land and buildings on farmland in Control counties was significantly less than in Watershed counties - $22.26 per acre of farmland. The highest value in Control counties again belonged to Columbia County with $14.72 per acre of farmland.

The comparison shows that the Watershed counties had a higher estimated value of agricultural real estate than the Control counties.

AGRICULTURAL LANDS AND AGRICULTURALLY ELIGIBLE LANDS



Note:

Agricultural Eligible Lands = NYS Agricultural Districts, Agricultural Exempt properties, parcels with land use codes for Agriculture (100s + 241), and Pasture/Hay and Cultivated Crops Ground Cover

- 57% of land in control Counties are Agricultural Eligible Land
- 31% of land in project boundary are Agricultural Eligible

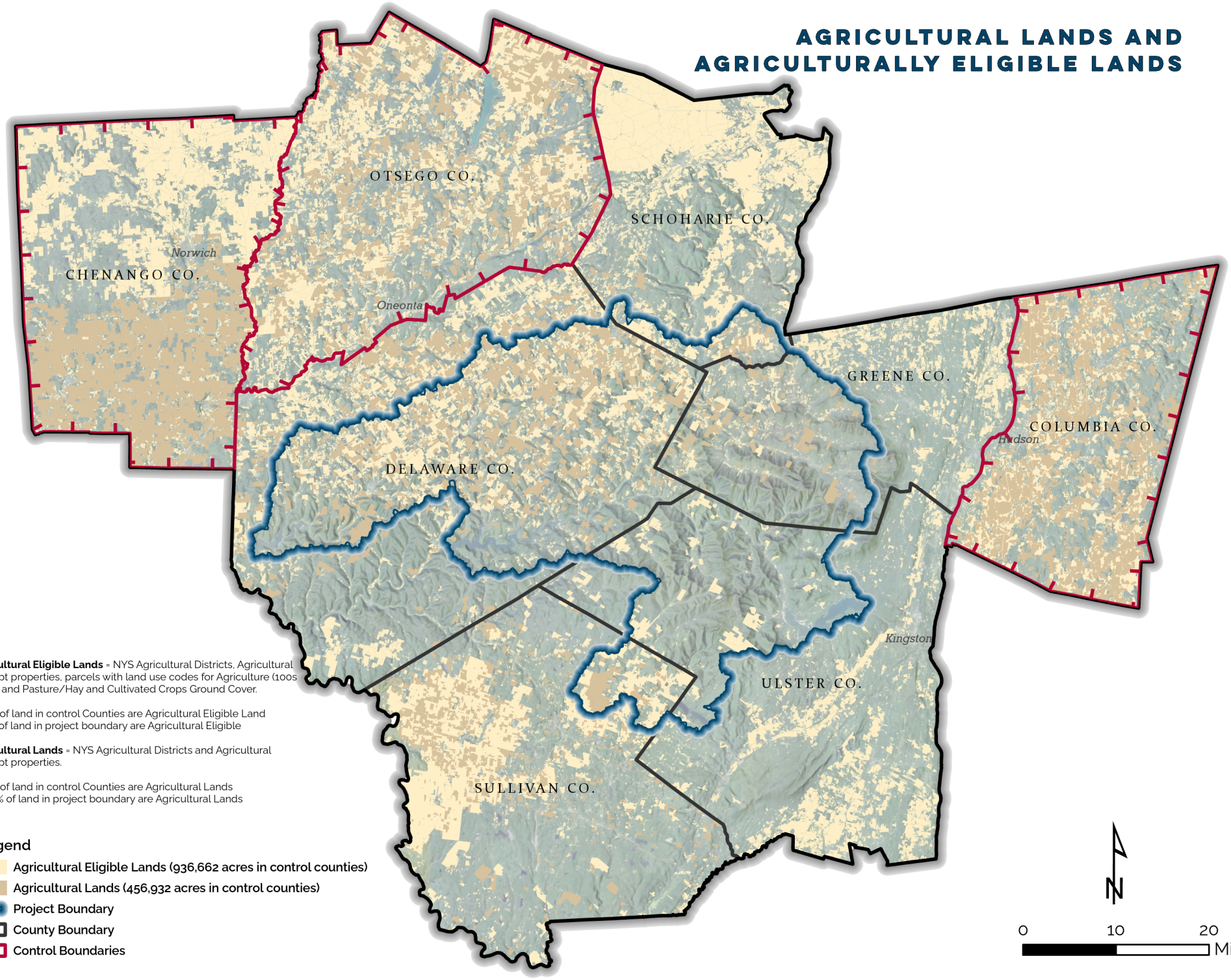
Agricultural Lands = NYS Agricultural Districts and Agricultural Exempt properties,

- 28% of land in control Counties are Agricultural Lands
- 14.5% of land in project boundary are Agricultural Lands

Legend

- Agricultural Lands (148,634 acres)
- Agricultural Eligible Lands (317,005 acres)
- Project Boundary
- County Boundary

AGRICULTURAL LANDS AND AGRICULTURALLY ELIGIBLE LANDS



Note:

Agricultural Eligible Lands = NYS Agricultural Districts, Agricultural Exempt properties, parcels with land use codes for Agriculture (100s + 241), and Pasture/Hay and Cultivated Crops Ground Cover.

- 57% of land in control Counties are Agricultural Eligible Land
- 31% of land in project boundary are Agricultural Eligible

Agricultural Lands = NYS Agricultural Districts and Agricultural Exempt properties.

- 28% of land in control Counties are Agricultural Lands
- 14.5% of land in project boundary are Agricultural Lands

Legend

- Agricultural Eligible Lands (936,662 acres in control counties)
- Agricultural Lands (456,932 acres in control counties)
- Project Boundary
- County Boundary
- Control Boundaries

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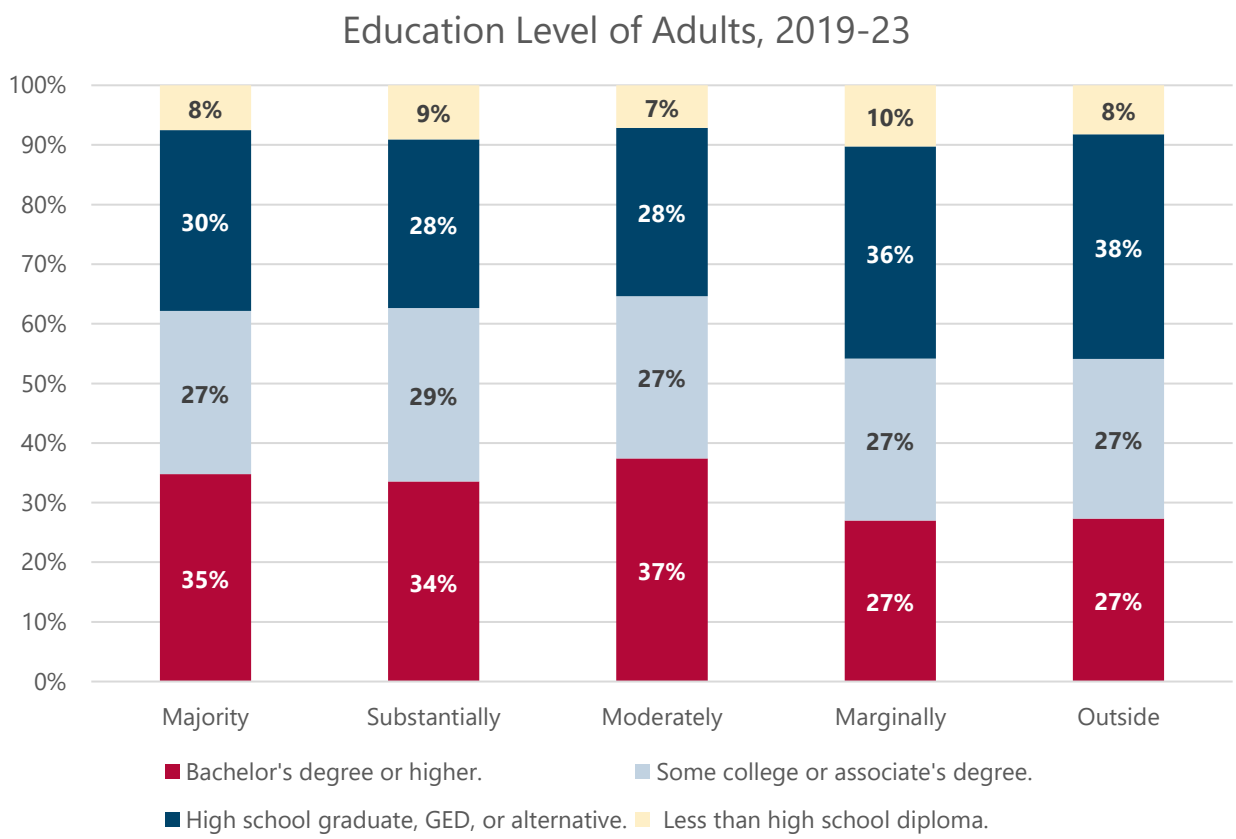
Personal Economic Well-Being, Education, and Workforce

Key Findings

- **Education levels of adults:** In 2019-23, all towns in the Watershed, except for those Marginally in the Watershed, outperformed the towns outside the Watershed in terms of average education levels of people 25 and older.
- **Median household income:**
  - Towns outside the Watershed had an average median household income of about $72,778, incrementally higher than the average of all Watershed towns at $71,509.
  - Towns Majority and Marginally in the Watershed had the lowest average median household incomes.
- **Percentage of people living in poverty:**
  - In 2019-23, poverty rates were higher on average in towns in the Watershed (12%) versus those outside the Watershed (10%).
  - Between 2009 and 2023 in the Watershed, the poverty rate fluctuated but leveled out to similar rates in all town groups except for towns Majority in the Watershed, which experienced a decrease of 2 percentage points over that time period.
  - Towns outside the Watershed experienced a 4-percentage point decrease in the percentage of people in poverty between 2009 and 2023.
- **Households receiving SNAP benefits:**
  - No obvious trend is observed when comparing towns outside the Watershed to towns inside the Watershed between 2009 and 2023.
  - Only towns that are Marginally in the Watershed had a higher percentage of households receiving SNAP benefits than towns outside the Watershed.
- **Means of Transportation to Work:** Both towns inside and outside the Watershed were heavily car-dependent and a vast majority of workers commuted alone.
- **Commute Time:** Towns inside and outside the Watershed had similar commute times (around 30 minutes).
- **GINI Index:** Although the GINI Index was slightly higher for towns outside the Watershed (0.47) than for the towns inside the Watershed (0.44 - 0.46), there is very little variation in the GINI Index between all town groups. This means that all town groups had similar levels of income inequality.
- **Annual sales tax per capita:** Over the five-year period (2020-2024), both Watershed counties and Control counties experienced steady growth in annual sales tax per capita. There was no clear trend in this metric when comparing Control and Watershed counties.

Education Level of Adults

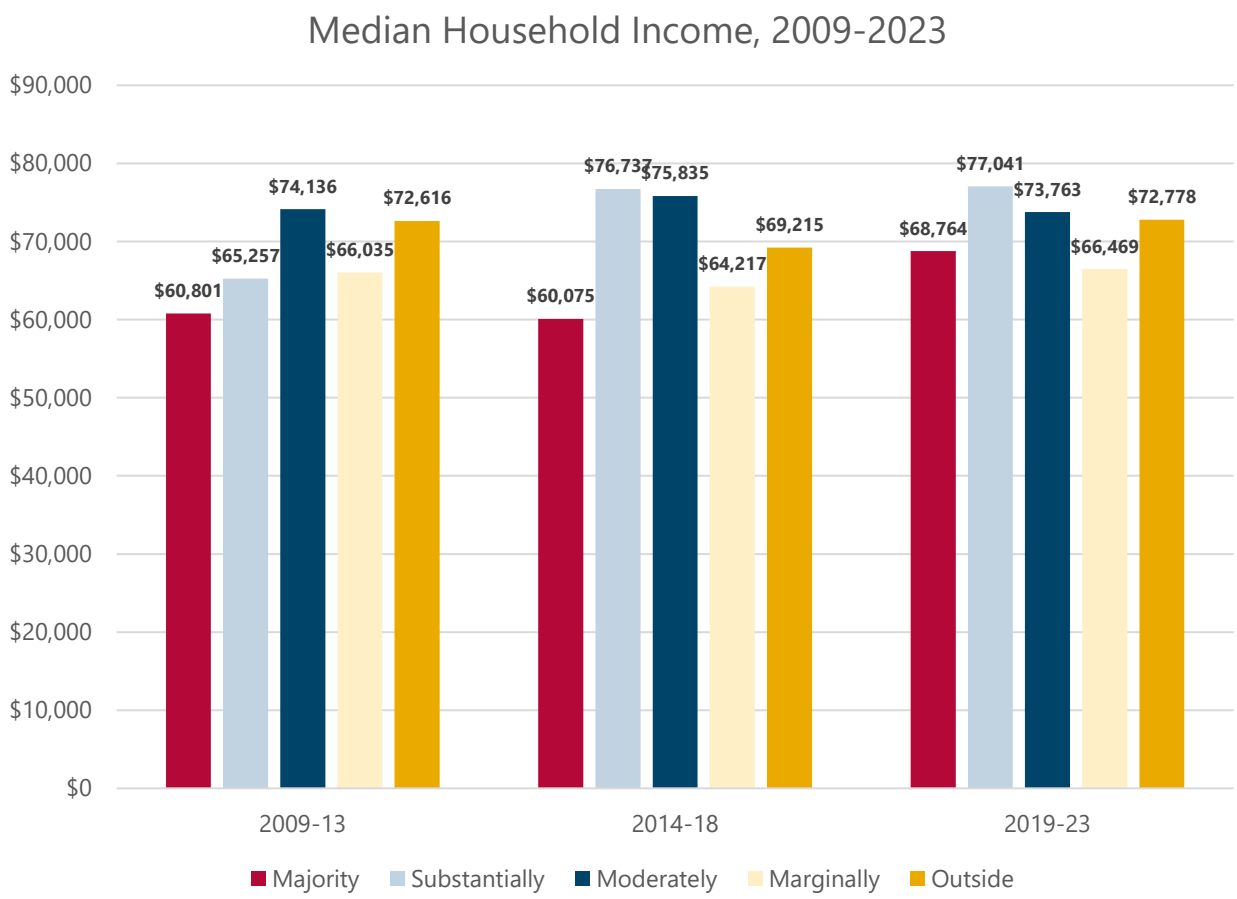


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

All town groups in the Watershed, except for those towns Marginally in the Watershed, outperformed the towns outside the Watershed in education levels of adults 25 and older.

Towns Marginally in the Watershed had the highest proportion of adults with less than a high school diploma (10%) and the lowest proportion with a Bachelor's degree or higher (27%). The other town groups in the Watershed had similar education levels for adults 25 and older.

Median Household Income

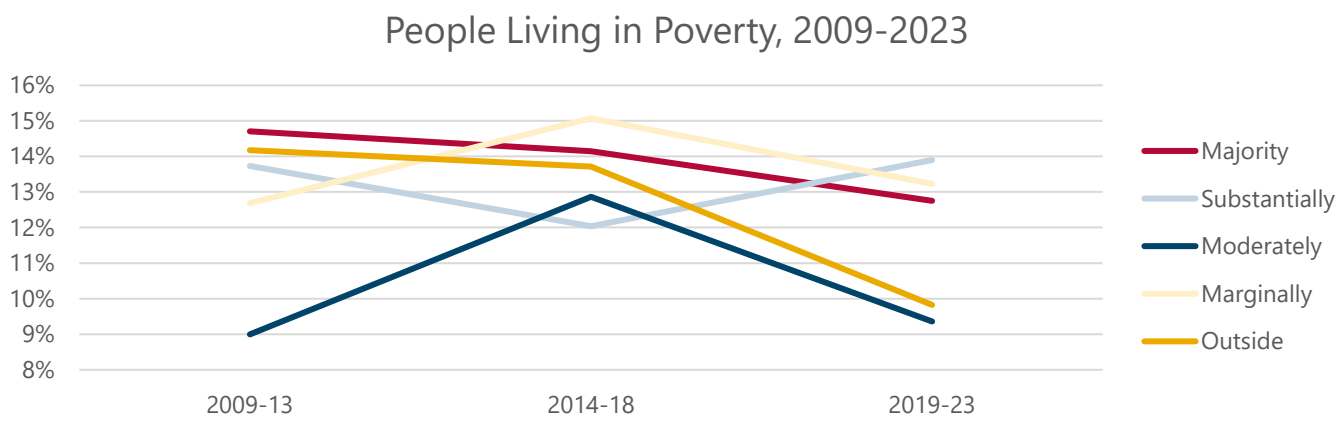


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Average median household incomes stayed largely flat between 2009 and 2023 in the towns Marginally and Moderately in the Watershed (slight decrease for Moderately and slight increase for Marginally), while they increased in towns Majority and Substantially in the Watershed (approximately $8k for Majority and $12k for Substantially). Towns Substantially in the Watershed had the highest median household income of any town group.

The towns outside the Watershed had an average median income of about $72,778, slightly higher than the average of all Watershed towns at $71,509.

People Living in Poverty

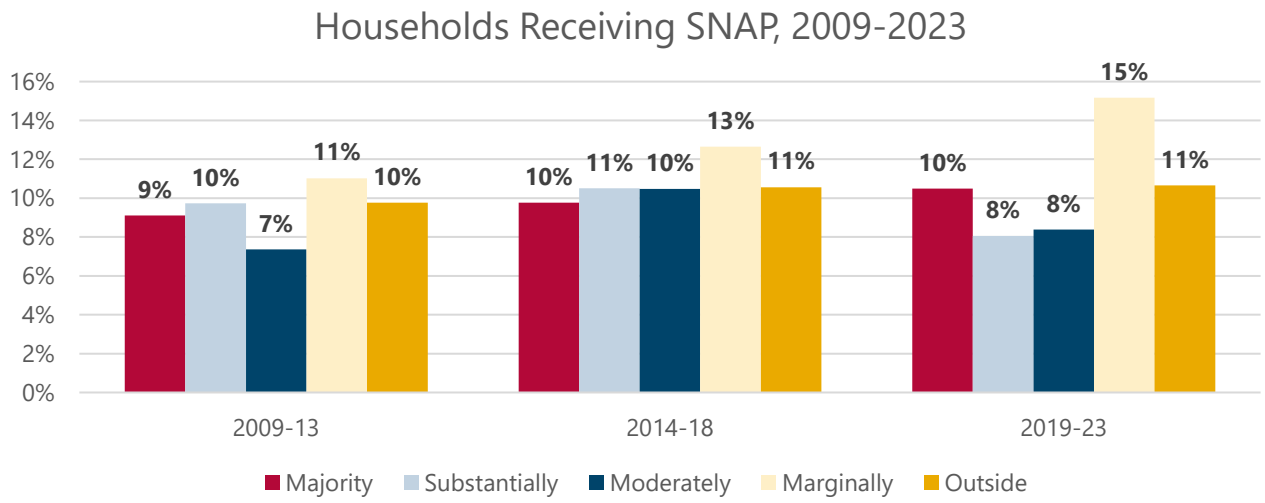


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

In 2019-23, poverty rates were higher on average in towns in the Watershed (12%) versus those outside the Watershed (10%). Towns outside the Watershed experienced the largest decrease in poverty rate between 2009 and 2023 of all town groups (4 percentage points).

Of the towns in the Watershed, only those Majority in the Watershed experienced a drop in average poverty rates between 2009-13 and 2019-23 (a decrease of 2 percentage points) while towns while all other groups fluctuated but leveled out to similar rates.

Households Receiving SNAP



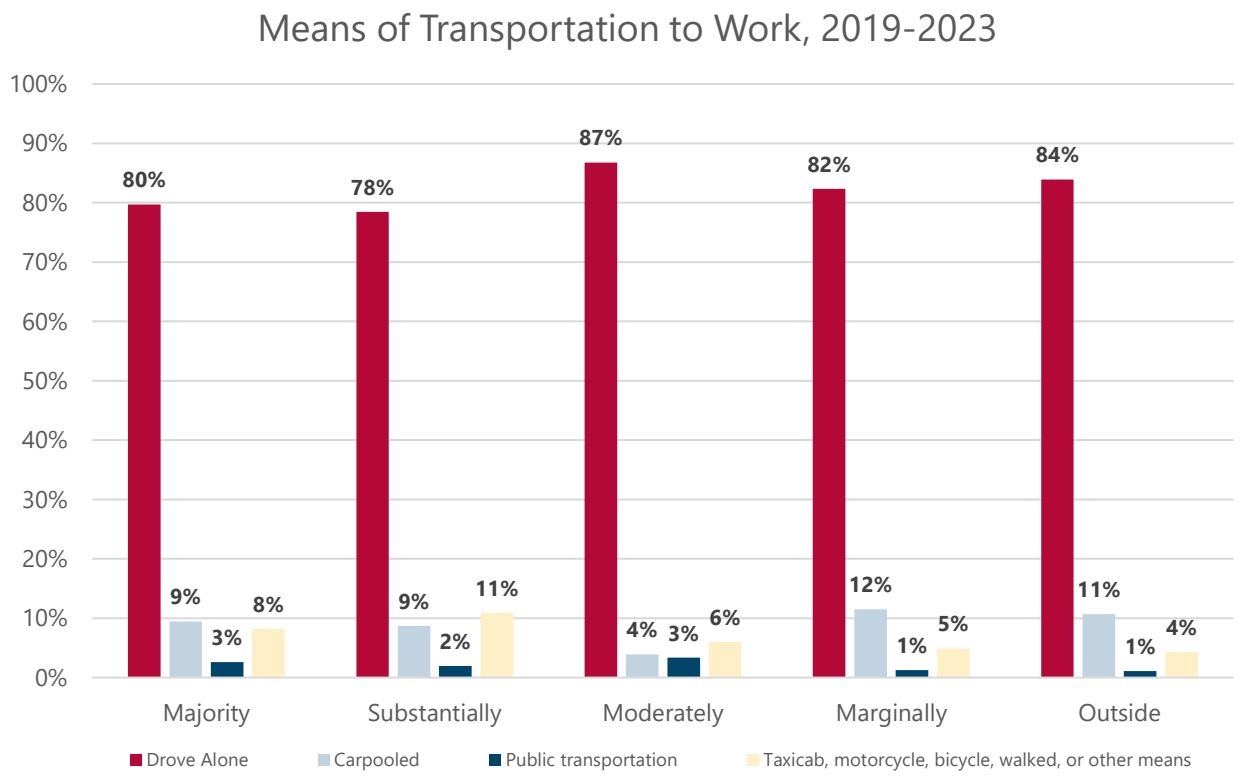
Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

From 2009-13 to 2019-23, towns Majority, Substantially, and Moderately in the Watershed experienced relative stability in the average share of households receiving SNAP benefits. Comparatively, towns that are Marginally in the Watershed increased by 4 percentage points.

No obvious trend is observed when comparing towns outside the Watershed to towns in the Watershed. Only towns that are Marginally in the Watershed had a higher percentage of households receiving SNAP benefits than towns outside the Watershed.

Means of Transportation to Work

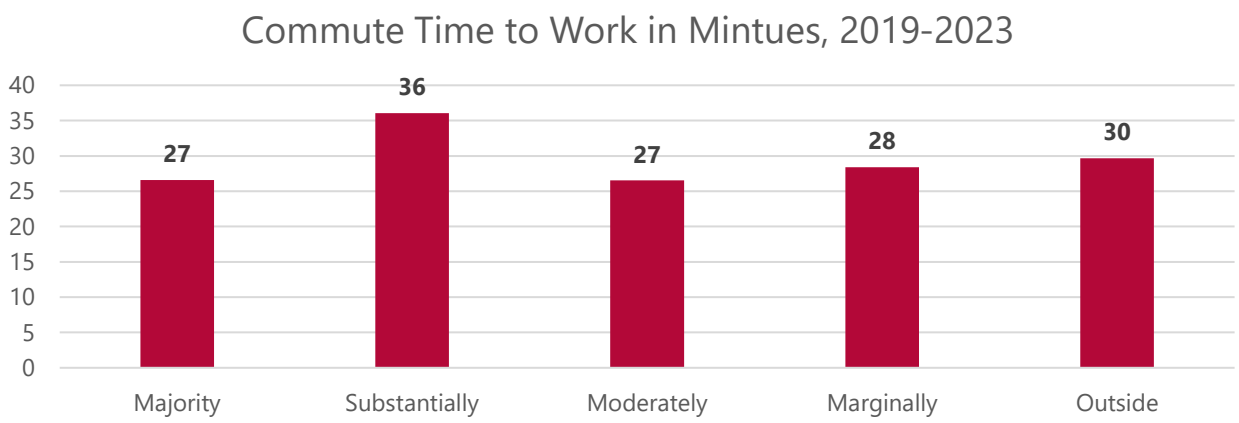
The rates in the chart below show the percentage of workers' means of transportation to work of those who do not work at home in 2019-23.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Towns outside the Watershed show similar rates to towns inside the Watershed in the different means of transportations used, with all town groups being heavily car dependent and a vast majority of workers commuting alone.

Commute Time



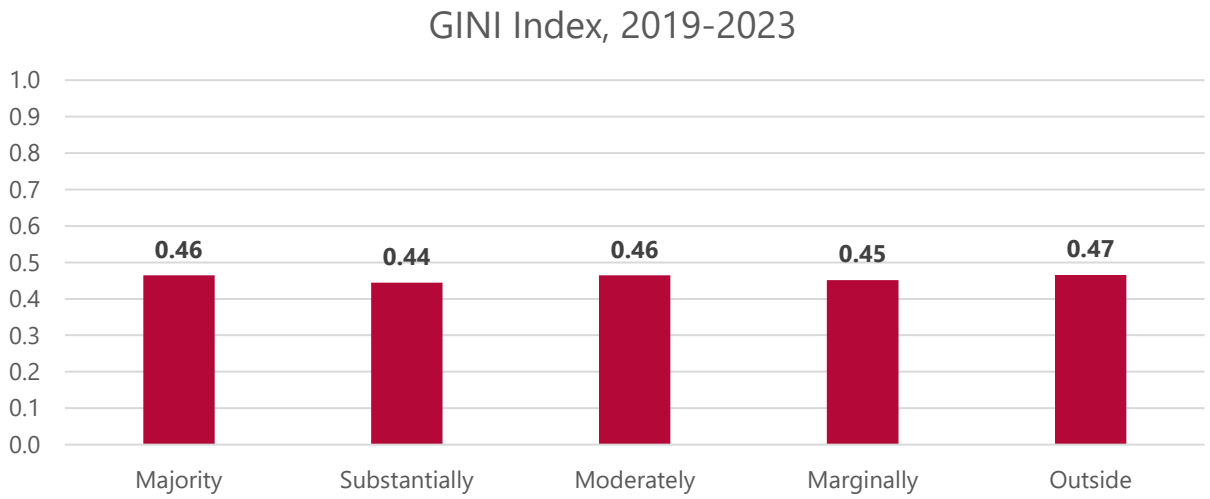
Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Commute times are similar (27-28 minutes) throughout the Watershed except in towns Substantially in the Watershed which have the highest average travel time to work (36 minutes).

Towns outside the Watershed had a similar commute time to towns inside the Watershed at 30 minutes.

GINI Index

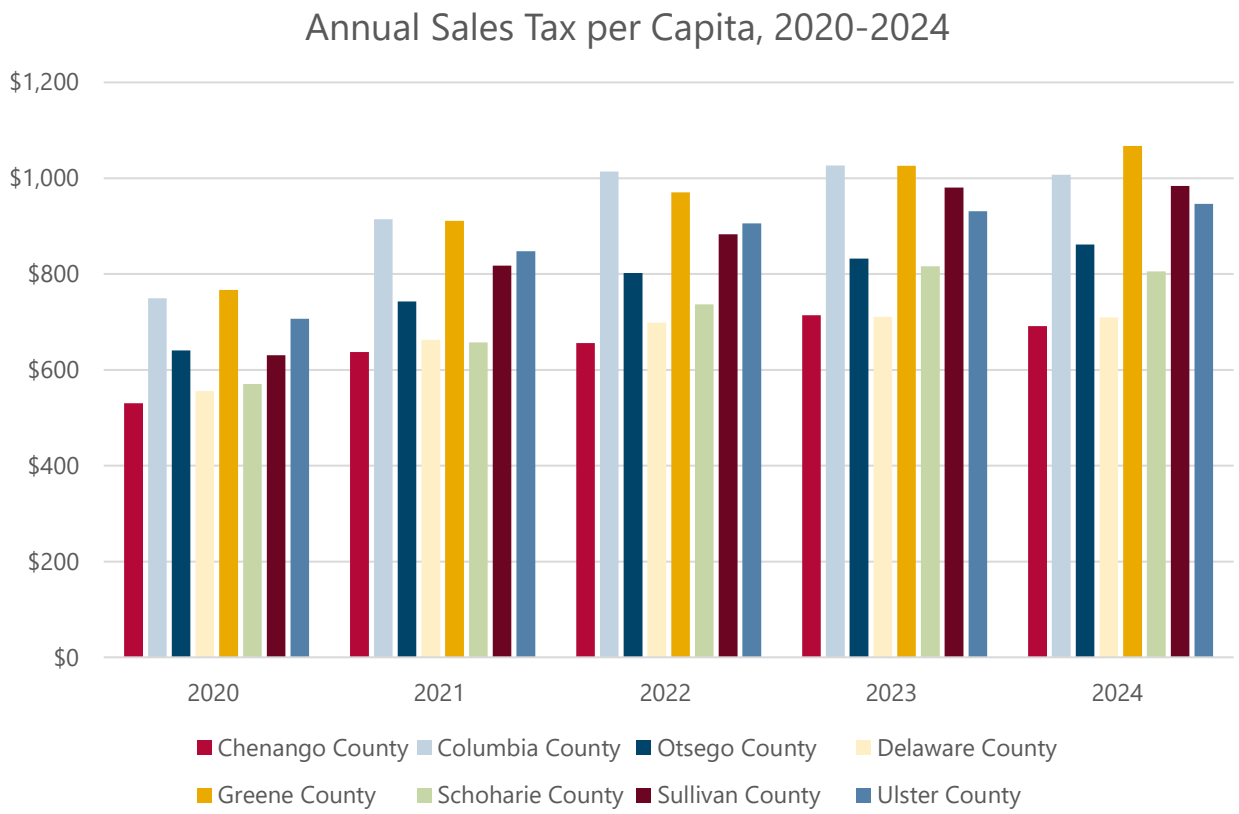
The Gini Index summarizes the dispersion of income across a population. The Gini coefficient ranges from 0, indicating perfect equality (where everyone receives an equal share), to 1, perfect inequality (where only one recipient or group receives all the income).



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Although the GINI Index was slightly higher for towns outside the Watershed than for the towns inside the Watershed, there was very little variation in the GINI Index between all town groups. All town groups had a GINI index close to 0.5 meaning that a small percentage of the population holds a larger share of income compared to the rest of the population.

Annual Sales Tax Per Capita



Source: New York State Department of Taxation and Finance, with calculations by the Office of the New York State Comptroller

This metric shows the Annual Sales Tax per Capita of both Watershed and Control counties by dividing the annual sales tax by the total population of the area.

Over the five-year period, both Watershed counties and Control counties experienced steady growth in annual sales tax per capita. There was no clear trend in this metric when looking at Control versus Watershed counties.

Over the five-year period, Greene County had the largest annual sales tax revenue per capita of any of the Watershed counties while Delaware County had the lowest. Sullivan County had the largest growth (56%) and Delaware had the lowest growth (27%). Columbia County had the largest amount of annual sales tax revenue per capita in the Control counties. Otsego and Columbia Counties both had the largest growth in the Control Counties (34%).

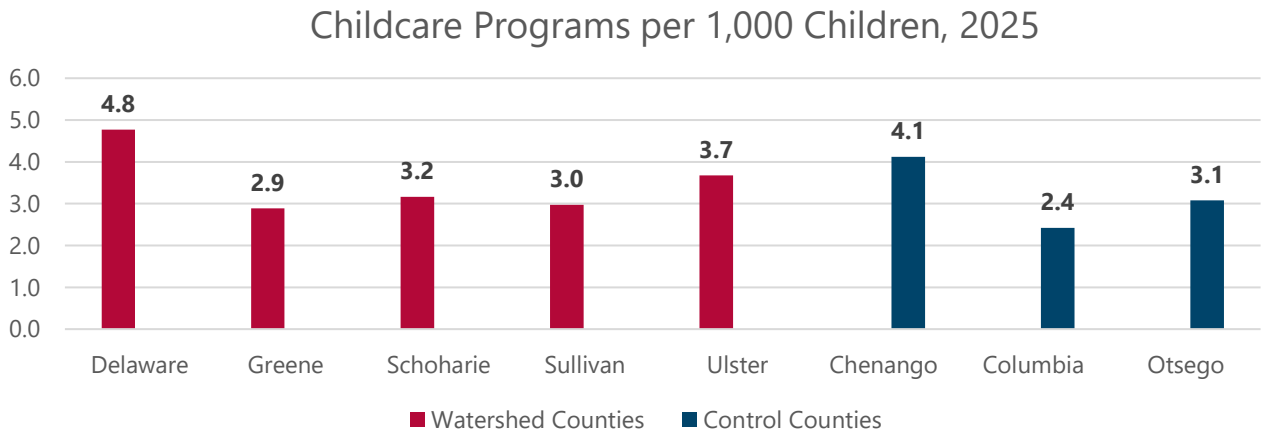
Children and Youth

Key Findings

- **Childcare programs per 1,000 children:** Watershed counties had slightly higher numbers of childcare programs per 1,000 children (average of 3.5) than the Control counties (average of 3.2).
    - Both the Watershed counties and the Control counties had a lower average number of programs per 1,000 children than the NYS figure (4.0 childcare programs per 1,000 children).
- **Children living in poverty:** While rates for towns in the Watershed have fluctuated between 2009 and 2023, towns outside the Watershed have seen a steady decline in child poverty in the same time period. The childhood poverty rate in 2023 was lower in the towns outside the Watershed (8%) than in all groups of towns in the Watershed (next closest rate being towns Moderately in the Watershed at 11%).
- **Disengaged youth:** Disengagement among youth has intensified over time in both towns inside and outside the Watershed. However, the largest growth was seen in Watershed towns, especially those Majority and Substantially in the Watershed, when compared to towns outside the Watershed.
- **High school graduation rates:** Graduation rates improved in both Watershed and Control counties, with similar increases in both between 2009 and 2024.

Childcare Programs per 1,000 Children

Childcare programs are integral to community vitality because they provide a safe space for children to learn and develop, as well as allow parents to be steadily employed. This metric illustrates the level of access that families have to childcare programs across the Watershed counties and Control counties.



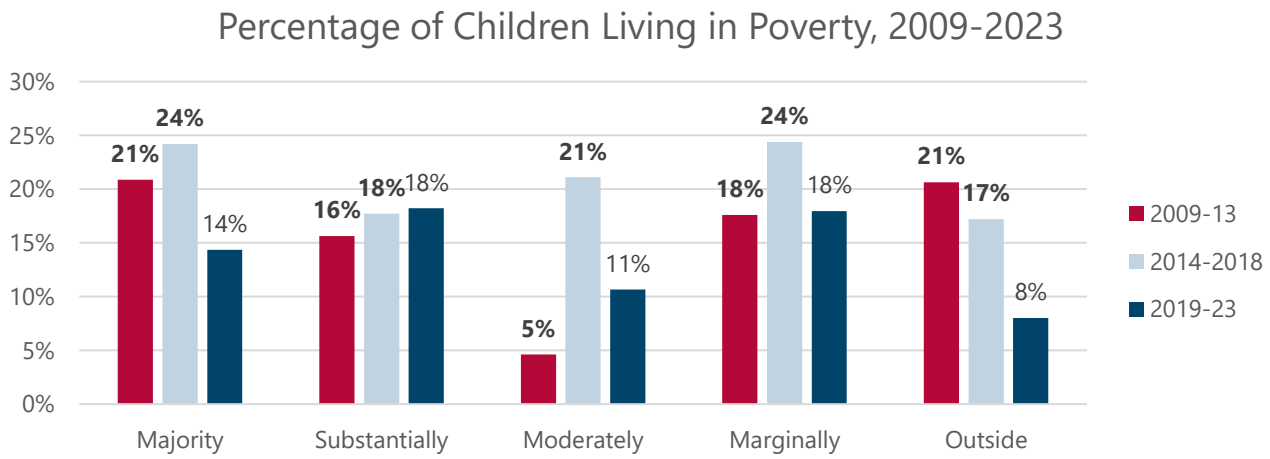
Source: New York State Office of Children and Family Services, OpenGov NY – as of November 2025

There was a small difference in the rate of childcare programs[15] between Watershed and Control counties. The five Watershed counties had an average of approximately 3.52 programs per 1,000 children. In contrast, the three Control counties showed a slightly lower average of approximately 3.2 programs per 1,000 children.

Both the Watershed counties and the Control counties in aggregate had a lower average number of programs per 1,000 children than the NYS figure of 4.0 childcare programs per 1,000 children.

While the overall average was higher in the Watershed counties, there was variance within both groups; Columbia County had the lowest rate at 2.4 programs per 1,000 children (with Greene County slightly higher at 2.9 as the next lowest), while Delaware County had the highest at 4.8 programs per 1,000 children (with Chenango County at 4.1 as the next highest).

Children Living in Poverty



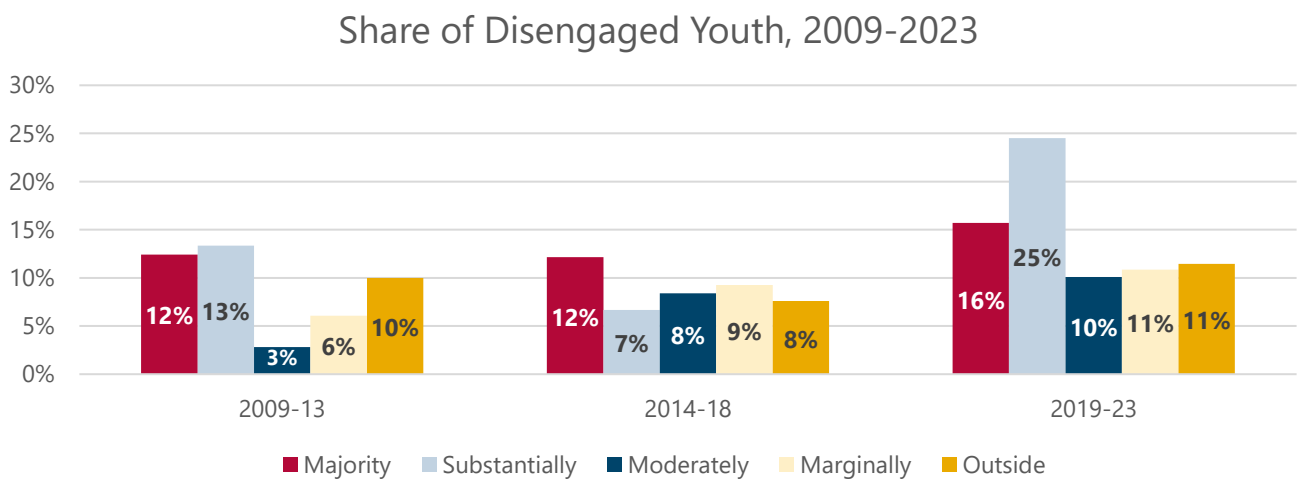
Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

The percentage of children living in poverty fluctuated between 2009 and 2023, with different trends observed across town groups in the Watershed.

While rates for towns in the Watershed fluctuated between 2009 and 2023, municipalities outside the Watershed saw a steady decline in child poverty in the same time period. The childhood poverty in 2023 was lower in the towns outside the Watershed (8%) than in all groups of towns in the Watershed.

[15] Data on numbers of childcare programs includes all regulated day care programs, including home-based and school-aged programs.

Disengaged Youth

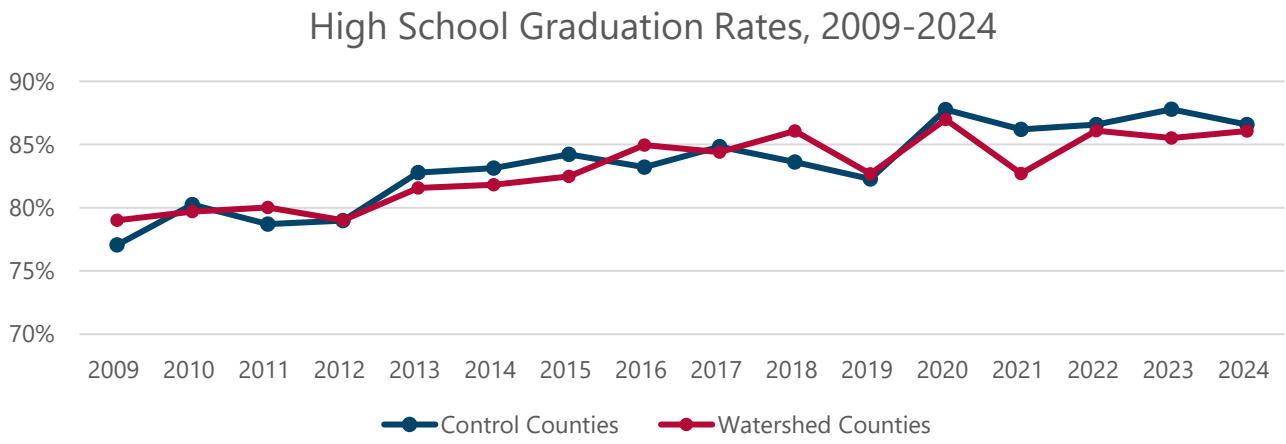


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

The disengaged youth metric measures the share of 16- to 19-year-olds who are not in school and not working.

The data indicates that disengagement among youth has intensified over time, with the largest growth seen in Watershed towns, especially those towns Substantially in the Watershed, when compared to towns outside the Watershed.

Graduation Rates



Source: NYS Education Department

This metric measures the high school graduation rate with the years denoting the 12th grade year for each four-year cohort. Both Watershed and Control counties saw an increase in average graduation rates between 2009 and 2024. The graduation rate for Watershed counties rose from 79% to 86%. In comparison, the graduation rate for Control counties rose from 77% to 83%.

Housing and Real Estate Affordability and Cost

Key Findings

- **Homeownership rate:**
  - Between 2013 and 2023, average rates of homeownership in Control counties have been slightly higher than those in Watershed counties, with dips in both county groups in 2018.
  - The largest difference between counties occurred in 2022 when Watershed counties had an average rate of 72.9% while Control counties had an average rate of 75%.
  - In 2023, the average rate in Watershed counties converged closer to the rate in Control counties.

- **Cost burdened households – homeowners:**
  - Between 2013 and 2023, Watershed counties consistently had higher average rates of housing burden among homeowners than Control counties, peaking in 2014 at 31.5% when Control counties averaged about 26%.
  - Owning a home in Watershed counties was more expensive than in Control counties, and homeowners in the Watershed spent more on their homes.[16]

- **Median home value:**
  - The median value of homes in Watershed counties was consistently higher than Control counties between 2013 and 2023.
  - The median value of homes in Watershed towns did not correlate with the proportion of a town's land area in the Watershed.

- **Median rental prices:**
  - Between 2013 and 2023, Watershed counties had higher average median rental prices than Control counties, except in 2014 and 2017.
  - Notably, in both Watershed and Control counties, the median rental payment in 2023 was lower than in prior years and was a shift from the prior two years of consistent increases in rent.
  - From 2022 to 2023, median rental prices decreased by 6.7% in Watershed counties and 4.9% in Control counties.
  - Between 2013 and 2023, median rental prices in Watershed towns have fluctuated, but towns Majority in the Watershed have consistently had the lowest median rental price (ranging from roughly $1,000/month in 2013 to roughly $900/month in 2023)

[16] In areas where households rely on private wells, water quality concerns may require installation and ongoing maintenance of household filtration/treatment systems. These out-of-pocket costs are not typically included in standard housing cost-burden metrics (e.g., rent/mortgage plus utilities) and may understate the true housing-related expenses.

and towns Moderately in the Watershed have had the highest median rental price (peaking at $1,250/month) until 2023 when towns Substantially in the Watershed became the highest (roughly $1,300/month).

- **Cost burdened households – renters:**
  - Trending with higher median rent payments, Watershed counties had higher rates of average cost burden among renters than in Control counties between 2013 and 2023. Rent cost burden rates in Watershed and Control counties peaked in 2014 and the largest difference between the rates in the county groups occurred in 2021 when renter housing burden in the Watershed counties was 50.8%, compared to 45% in Control counties.
  - In contrast to the cost burden on homeowners, average rates of cost burden among renters have been steadily declining in Watershed counties over the decade, indicating that either incomes among renters increased or rental rates increased at a slower pace than incomes in the Watershed counties.

- **Vacancy rates:**
  - Vacancy rates in Watershed counties were consistently higher than those in Control counties between 2013 and 2023.
  - Since 2020, the vacancy rate in Watershed counties has trended toward the rate in Control counties, suggesting a higher demand for housing in the Watershed counties or an effort to rehabilitate prior vacant units to a habitable state.
  - Between 2013 and 2023, towns Majority and Substantially in the Watershed consistently had the highest average vacancy rates, while towns Marginally in the Watershed had the lowest.

- **Seasonal units:** Between 2013 and 2023, there were far more seasonal units in Watershed counties than in Control counties. This indicates that the Watershed counties are popular for second homeowners, vacationers, and short-term rentals.
- **Short-term rental units:**
  - Although Control counties had fewer active listings, these listings were more profitable for owners and occupancy was 10 percentage points higher than in Watershed counties.
  - Daily rates were about 5% higher in Watershed counties.

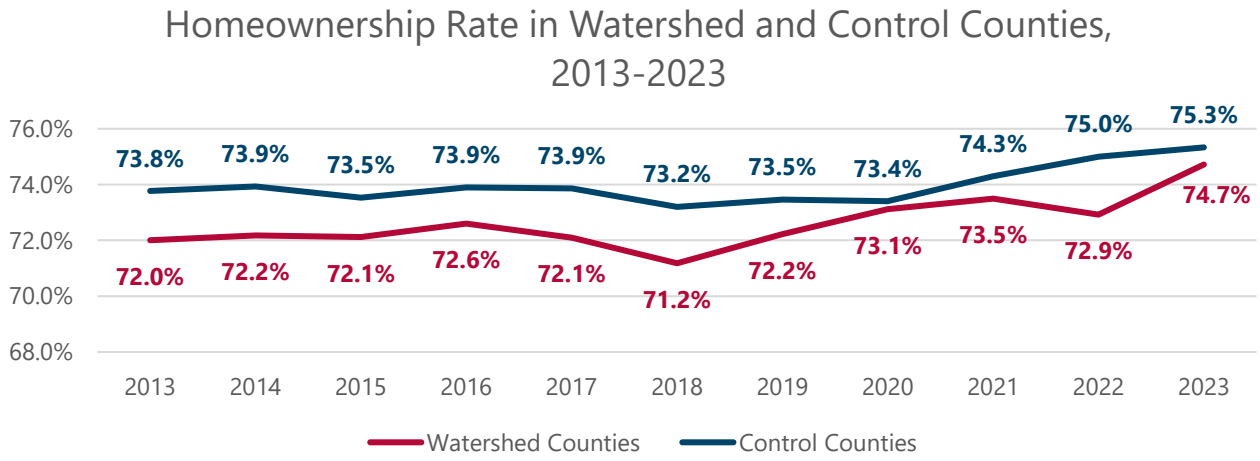
- **New housing starts and permits issued:**
  - In every year between 2013 and 2023, Watershed counties issued significantly more new permits than Control counties.
  - The value of these new permits varied over the decade, tracking with the total number of new permits issued.
  - Watershed counties recorded consistently higher levels of valuation, reflecting an active construction market that provided a return on investment.

- **Permits by housing type:**

- In terms of permits by type of housing, Watershed counties had far more permits issued for new single-family homes than Control counties.
- Trends in permits issued for multi-family units showed more volatility between the county groups.

- **Foreclosure:** In both Watershed and Control counties, a very small portion of the total housing units were listed as foreclosed in 2025. In Watershed counties, this was 0.42% while in Control counties it was 0.33%.
- **Total assessed value per capita:** Comparing rates of change in Watershed and Control counties, a 27% increase in TAV per capita in Watershed counties was recorded between 2014 and 2024 while a 21.1% increase in Control counties was recorded.

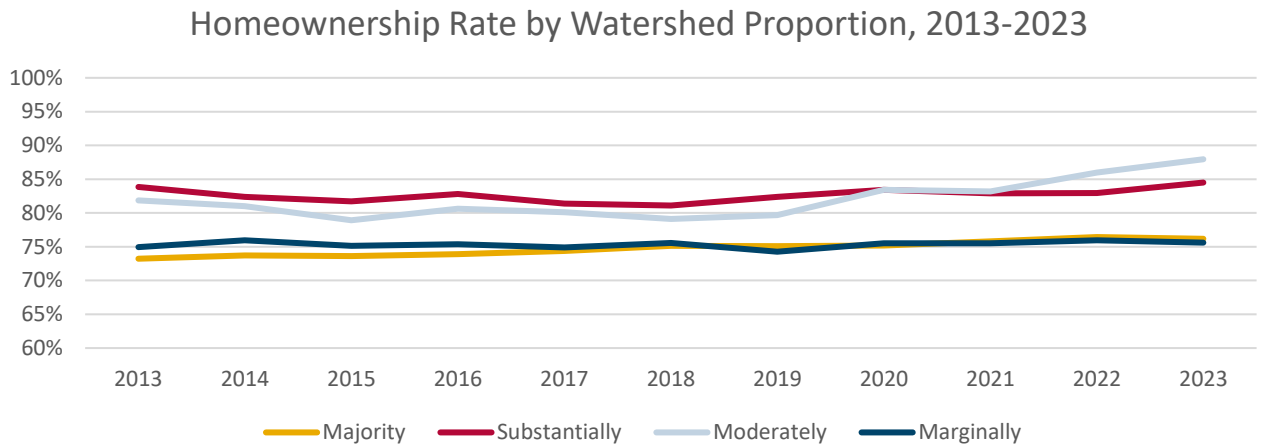
Homeownership Rate



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data [17]

Average rates of homeownership in Control counties have been slightly higher than those in Watershed counties, with dips in both in 2018. The largest difference between counties occurred in 2022 when Watershed counties had an average rate of 72.9% while Control counties had an average rate of 75%.

[17] The ACS 5-year estimates are updated annually by adding data from the most recent survey year and dropping the oldest year of the previous 5-year period. For example, the 2016-2020 5-year estimates are based on survey data collected from January 2016 through December 2020; the next release swaps 2016 data for 2021 data to create the 2017-2021 5-year estimates. This rolling process produces continuously updated statistics that reflect the average characteristics over the most recent 5-year period.

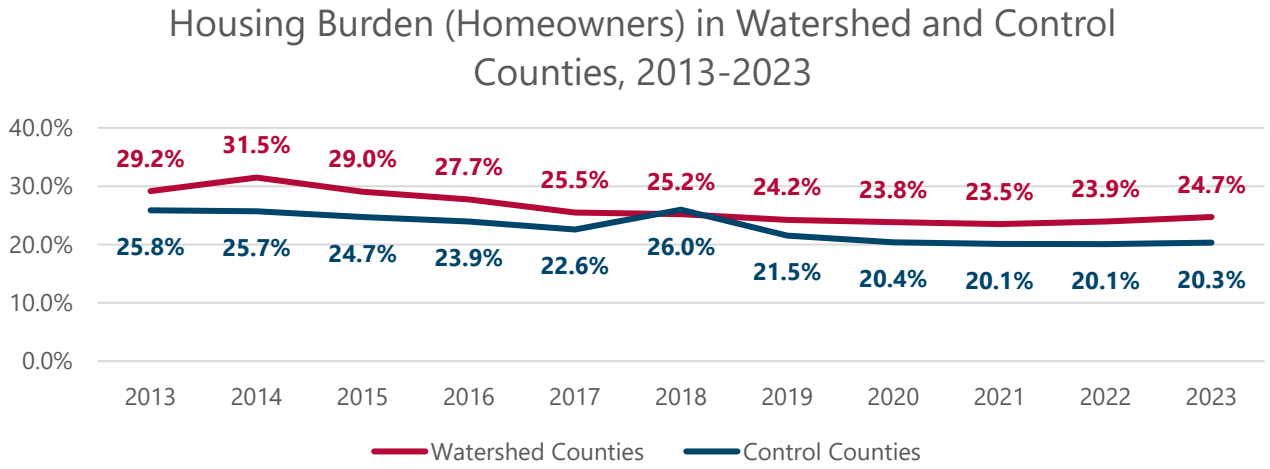


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

For towns in the Watershed, average homeownership rates have been similar across the decade. Towns that are Moderately and Substantially in the Watershed have had slightly higher rates compared to those that are Majority or Marginally in the Watershed.

Cost Burdened Households - Homeowners

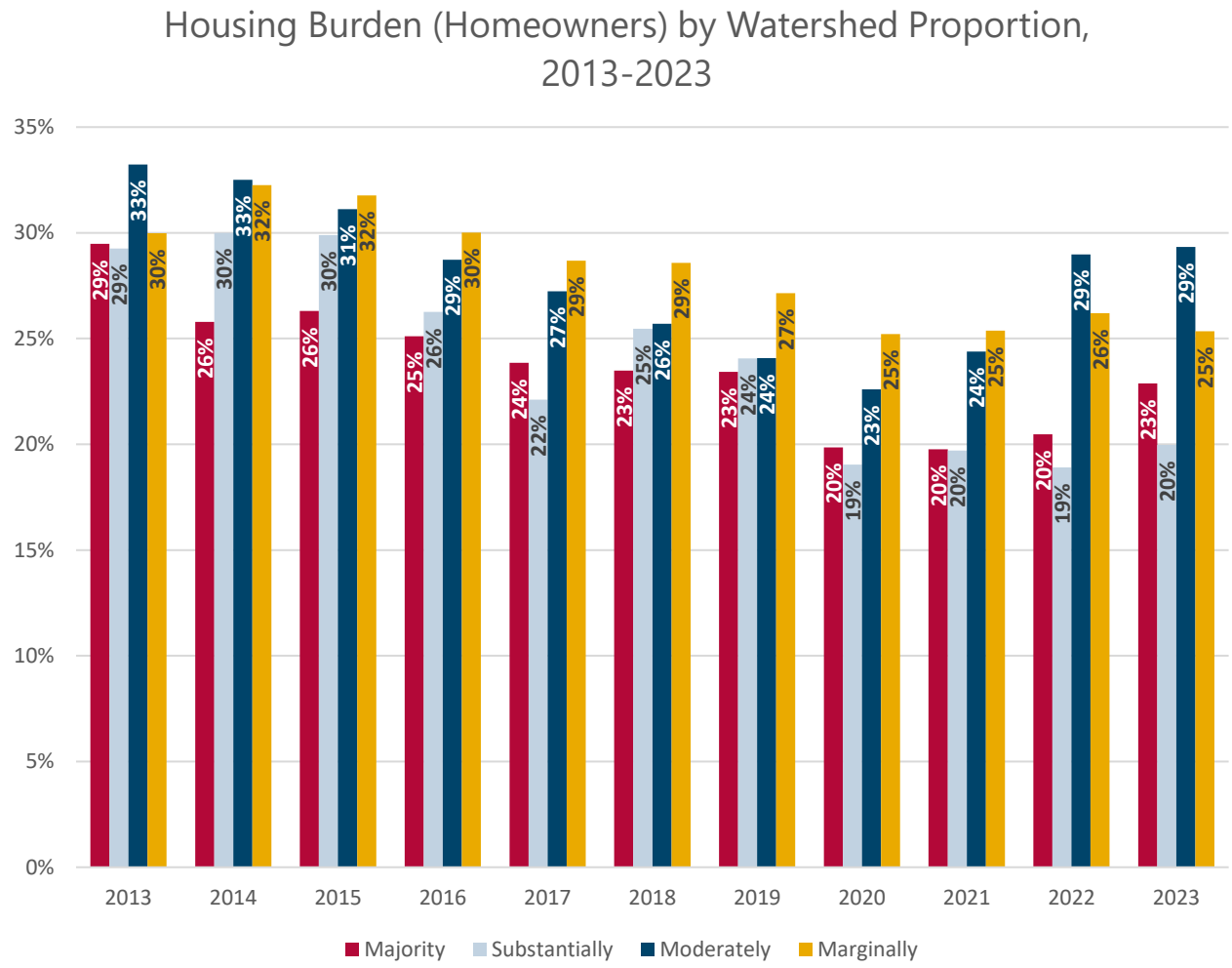
Housing cost burden measures the proportion of households paying more than 30% of their monthly income on housing expenses, leaving less income for other necessities like food and healthcare.[18]



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

[18] The housing burden metric in Census Data measures the share of household income that goes toward total housing costs, including rent or mortgage payments, utilities, fuel costs, property taxes, insurance, and fees.

Over the decade, Watershed counties have consistently had higher average rates of housing burden among homeowners than Control counties, peaking in 2014 at 31.5% when Control counties averaged about 26%. An outlier in this trend occurred in 2018 when the homeowner housing burden rate jumped in Control counties landing slightly above the rate in Watershed counties. The homeowner housing cost burden rate had been steadily declining in Watershed counties over the decade but had a slight increase in 2023.

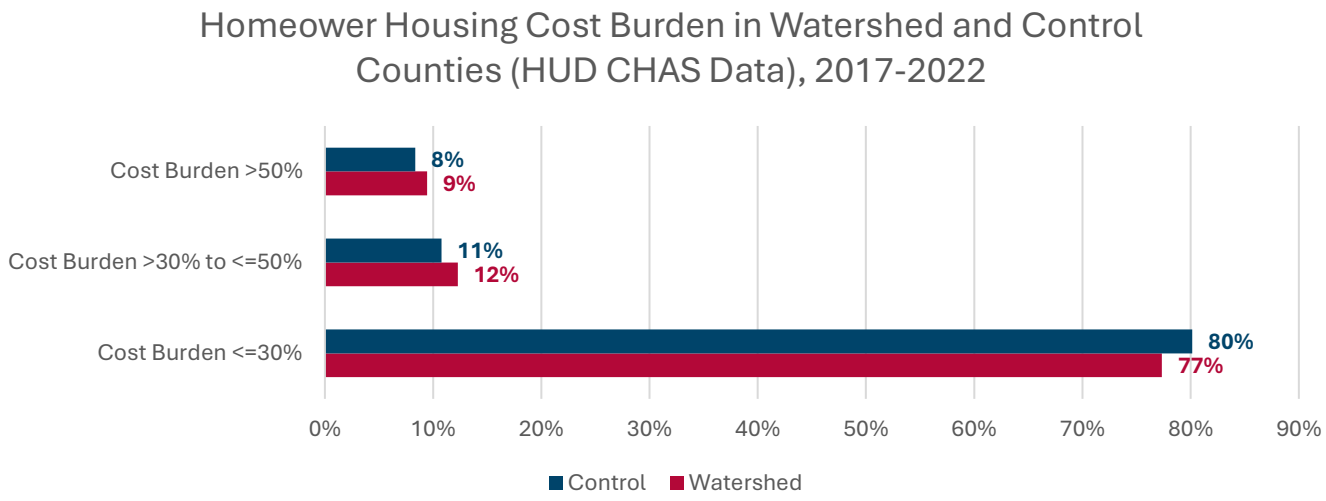


Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Average housing cost burden for homeowners in towns in the Watershed has trended downward over the decade, with towns that are Majority or Substantially in the Watershed recording lower levels than those Moderately or Marginally in the Watershed. Notably, the trend in homeowner housing burden diverged in 2022, when burden rates began to rise in towns Moderately or Marginally in the Watershed. This suggests that incomes and housing costs in places within the Watershed were more aligned.

Another data source for measuring housing burden is the U.S. Department of Housing and Urban Development's Comprehensive Housing Affordability Strategy (CHAS) data, a set of

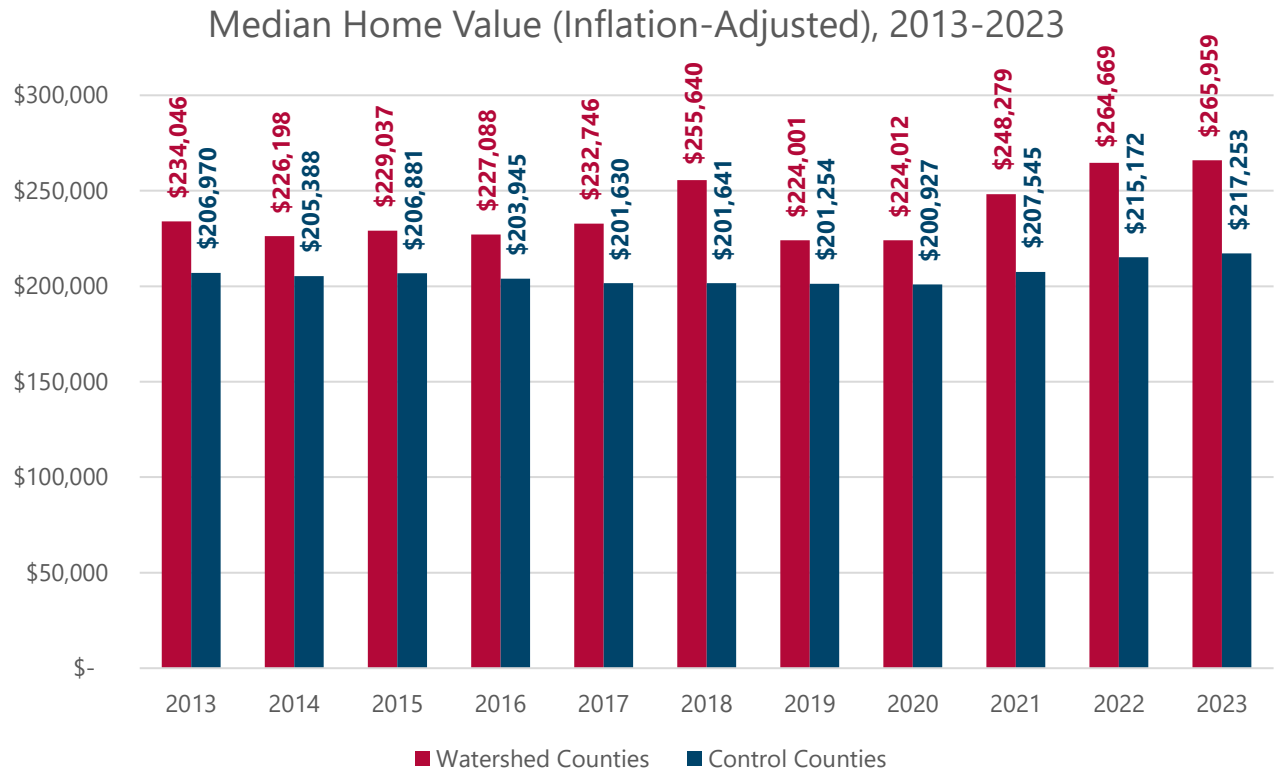
detailed statistics derived from the American Community Survey. It covers the most recent ACS data period – in this case, 2017-2022 – and is only available at the County level.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

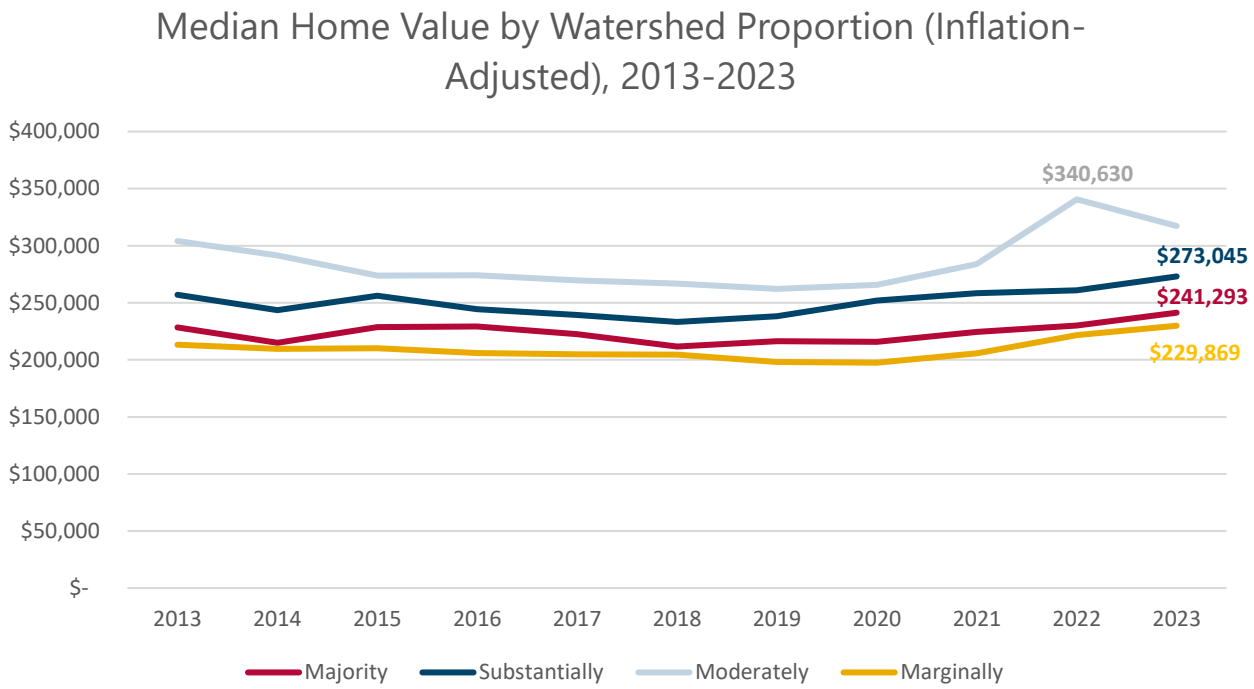
About 9% of homeowners in Watershed counties spend more than 50% of their monthly income on housing costs (severely cost burdened). In Control counties, 8% of homeowners are severely cost burdened. This data shows no significant differences in homeowner housing cost burden in Watershed and Control counties.

Median Home Value



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

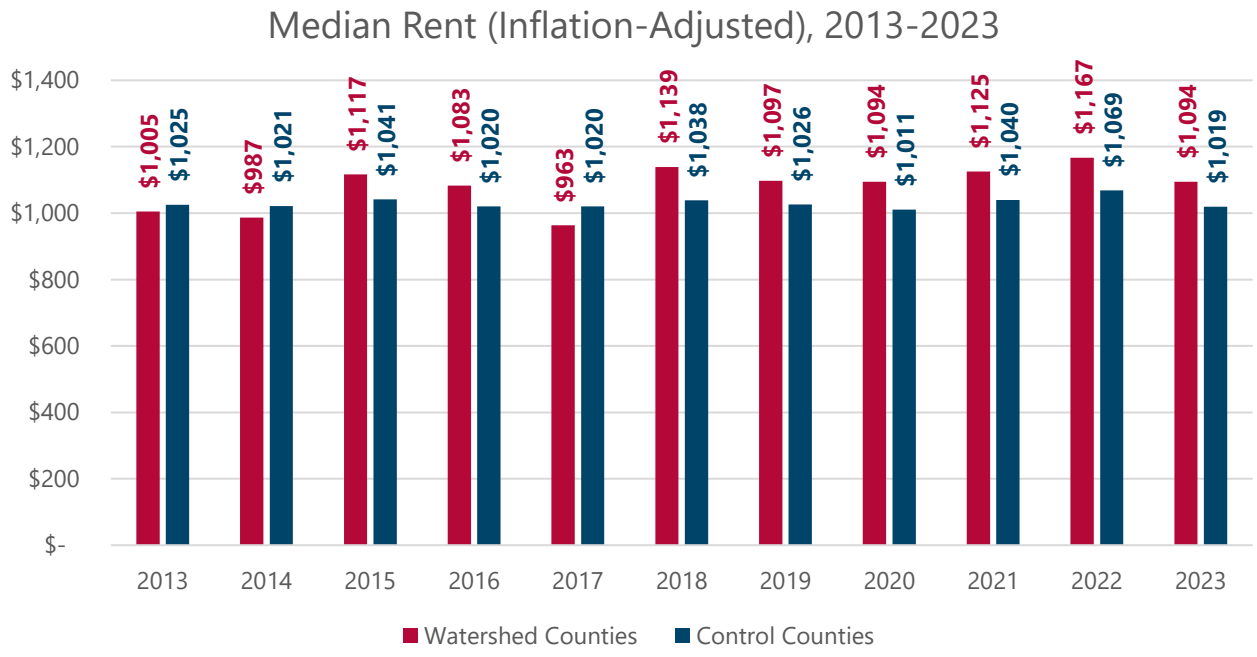
The average median value of homes (adjusted to 2025-dollar values) in Watershed counties was consistently higher than Control counties between 2013 and 2023. The largest differences in home values in these two groups was in 2018 and 2022 when Watershed homes were valued, on average, $54,000 and $49,500 more, respectively. The higher home values in Watershed counties point to a higher demand for living in these counties. This could be due to a myriad of factors, including access to the Watershed and the recreational opportunities it provides as well as scenic views and other natural resources



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

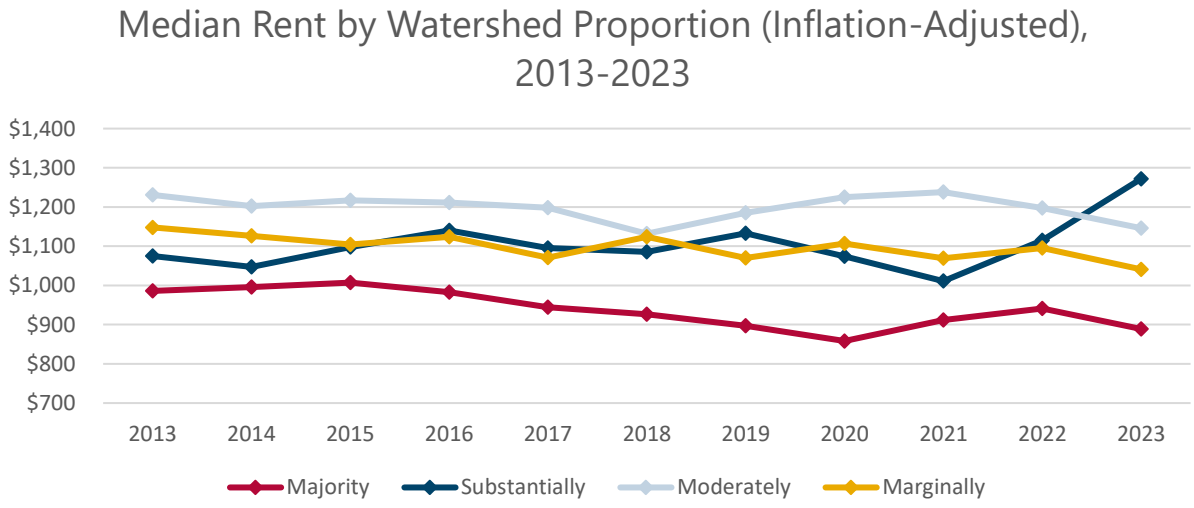
The average median value of homes in towns did not correlate with the proportion of land area in the Watershed. Towns Moderately in the Watershed had the highest average median home values over the decade, recording a peak of $340,630 in 2022, nearly $68,000 over the next-highest average value in towns Substantially in the Watershed.

Median Rental Prices



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

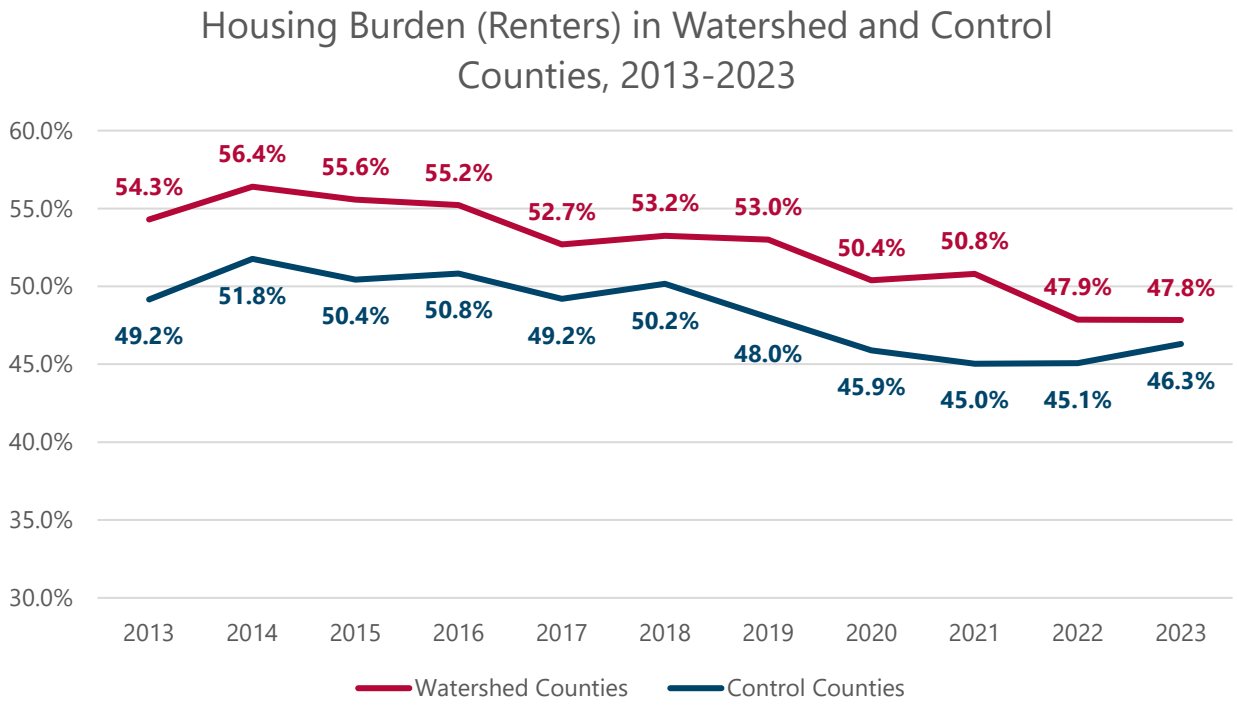
Watershed counties have had higher average median rental prices than Control counties, except in 2014 and 2017. Notably, in both Watershed and Control counties, the 2023 median rental payment was lower than in prior years, a shift from the prior two years of consistent increases in rent. From 2022 to 2023, median rental prices decreased by 6.7% in Watershed counties and 4.9% in Control counties.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

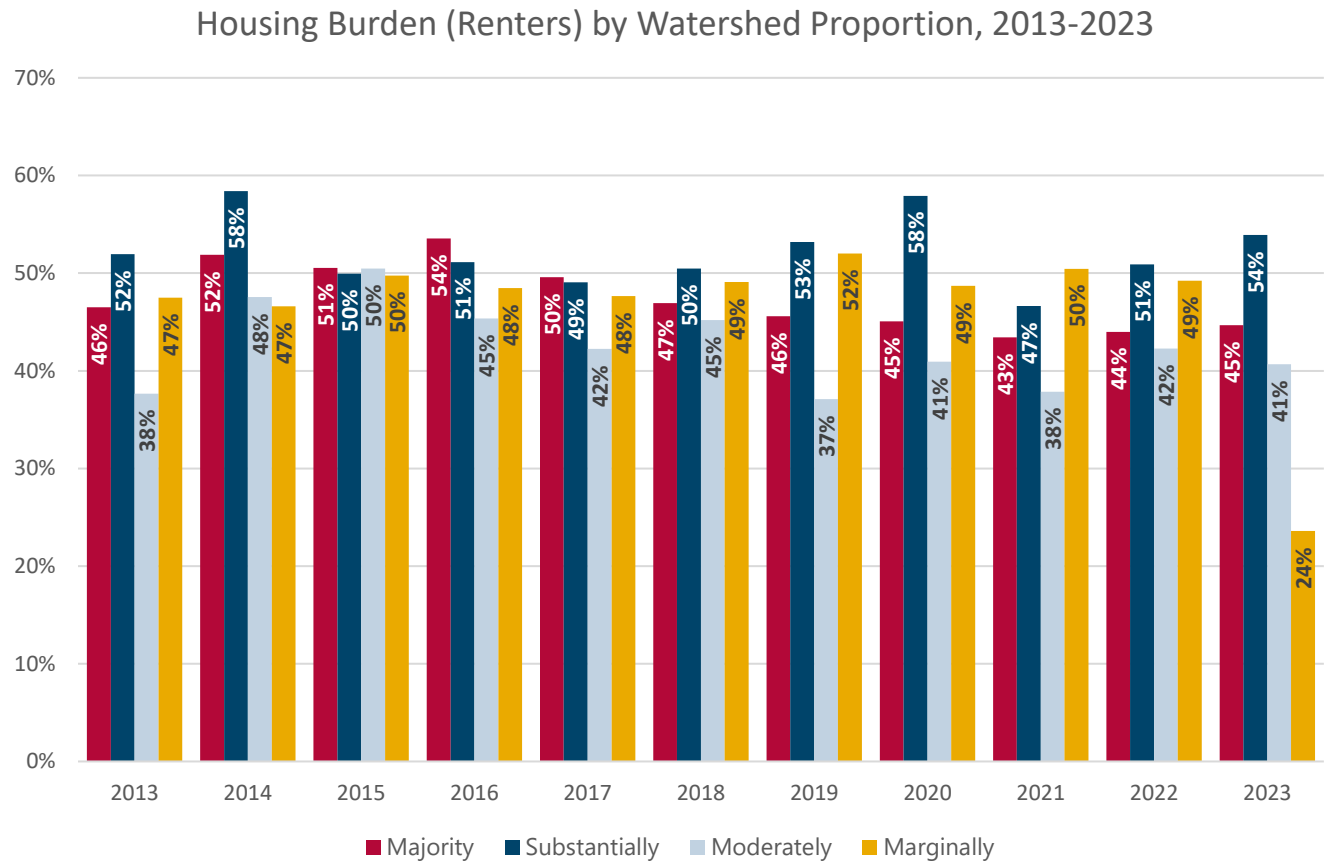
Median rental prices in towns in the Watershed have fluctuated over the decade, especially in towns Substantially in the Watershed. Towns that are Majority in the Watershed have had the lowest median rental rates since 2013, suggesting lower demand for rental units. Rents have been highest in towns that are Moderately in the Watershed, though experiencing a steady decline since 2021. Notably, all towns, except for those that are Substantially in the Watershed, saw a drop in median rental prices between 2022 and 2023.

Rent Burdened Households



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

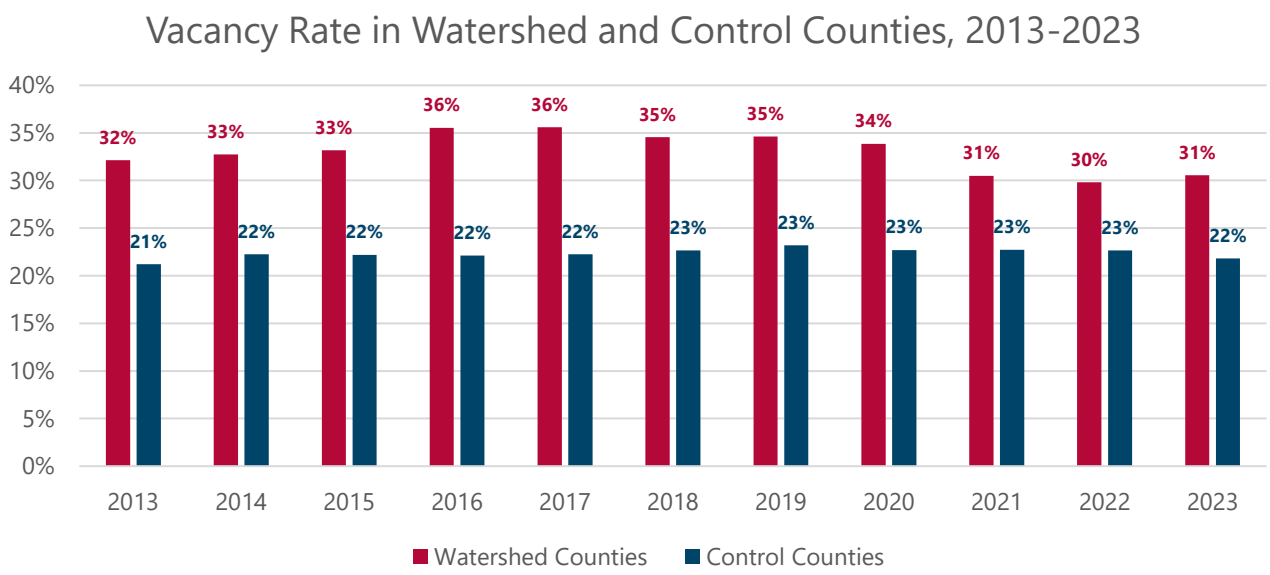
Trending with higher median rent payments, Watershed counties had higher rates of average cost burden among renters than in Control counties between 2013 and 2023. Rent cost burden rates in Watershed and Control counties peaked in 2014 and the largest difference between the rates in the two county groups occurred in 2021 when renter housing burden in the Watershed was 50.8%, compared to 45% in Control counties. Average rates of cost burden among renters have been steadily declining in Watershed counties over the decade, indicating that either incomes among renters increased or rental rates increased at a slower pace than incomes in these counties.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

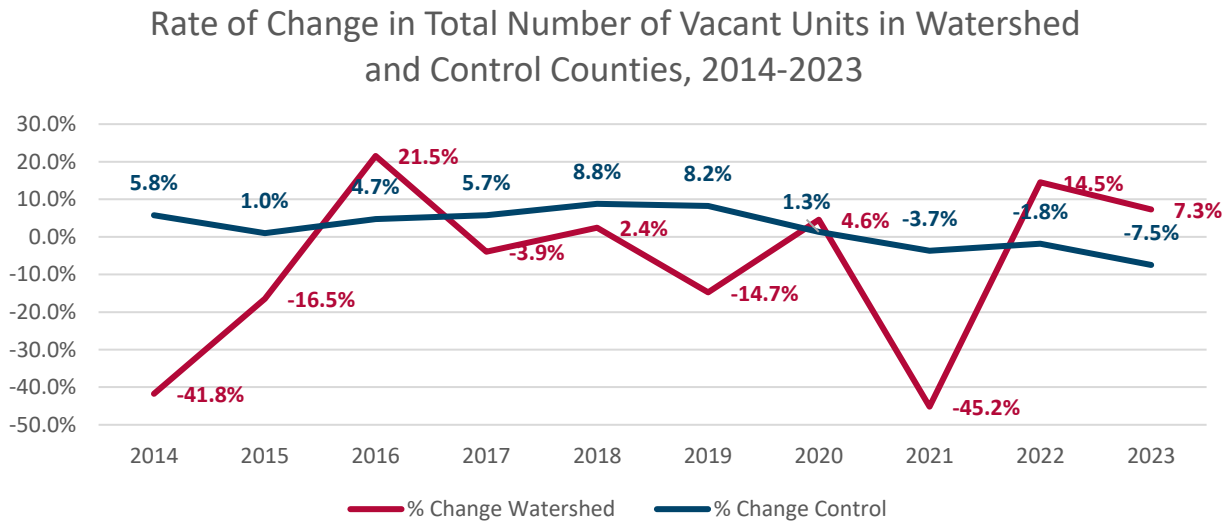
Renter housing burden in towns in the Watershed was generally about 50% of renters between 2013 and 2023. Rates were slightly higher in towns Substantially in the Watershed, with the greatest fluctuations in renter housing burdens seen in towns Moderately or Marginally in the Watershed. This indicates that rental prices in towns with greater land area in the Watershed are more out of alignment with renter incomes and costs of living.

Vacant Housing Units



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

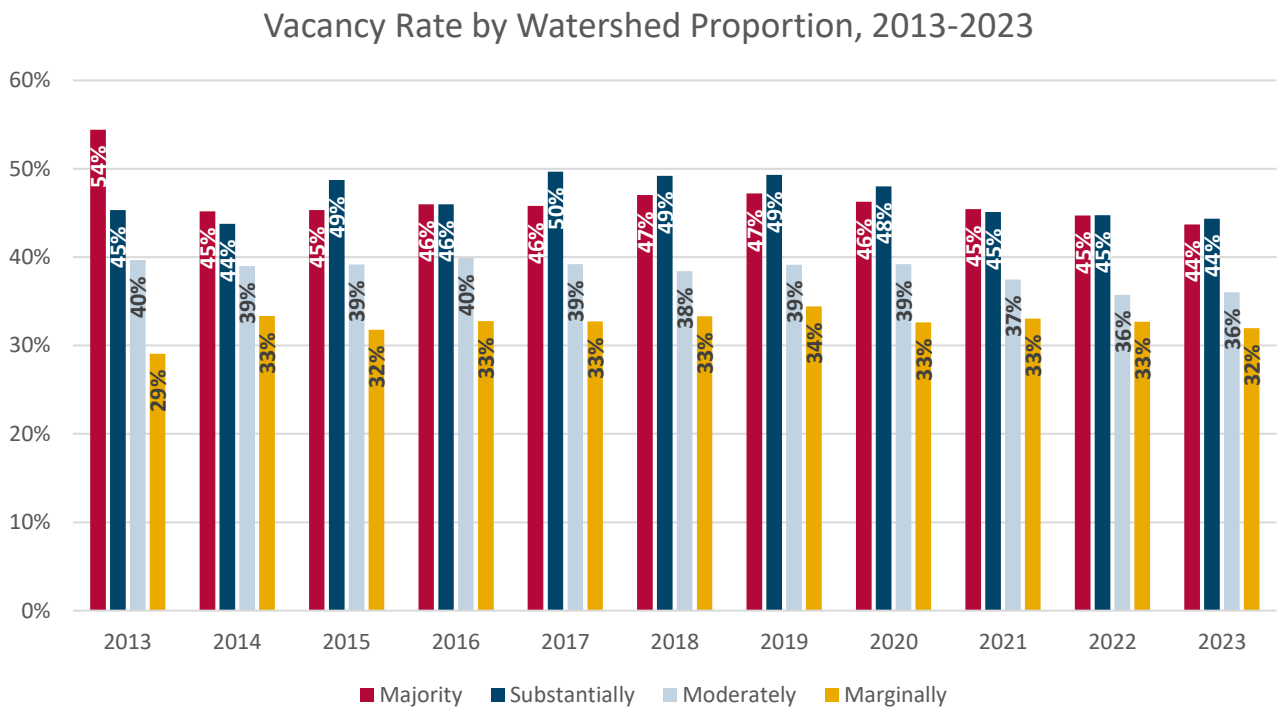
Average vacancy rates in Watershed counties were consistently higher than those in Control counties between 2013 and 2023, peaking in 2016 and 2017 at 36%. Since 2020, the vacancy rate in Watershed counties has declined, potentially indicating higher demand for housing in the counties or an effort to rehabilitate prior vacant units to a habitable state.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

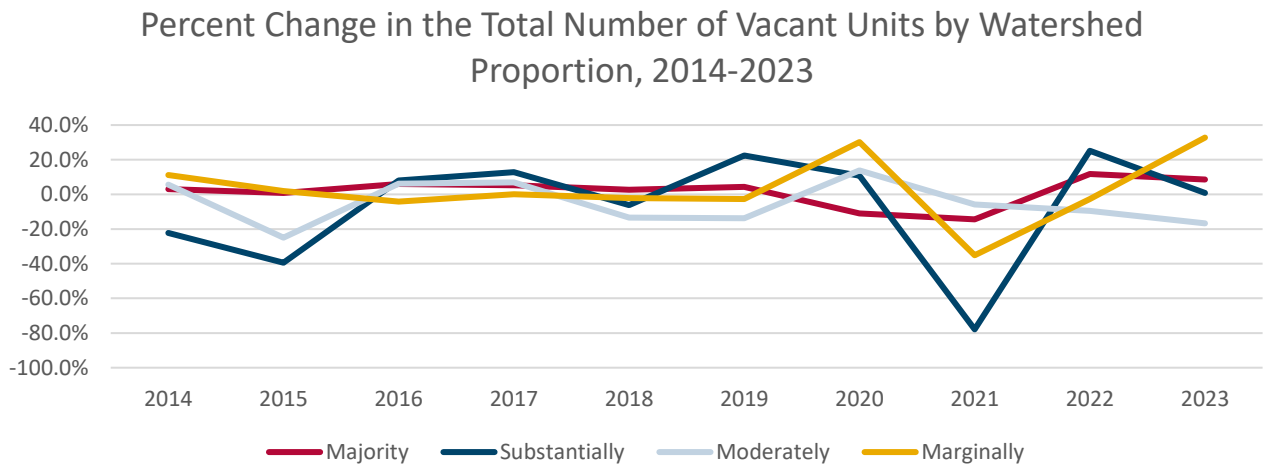
Looking at the rate of change year over year, Watershed counties showed more volatility than Control counties in the number of vacant housing units, either decreasing sharply (e.g. decreasing 42% between 2013 and 2014), or increasing (e.g. increasing 22% between 2015

and 2016). In comparison, the rate of change in the total number of vacant units in Control counties only fluctuated between a decrease of 8% and an increase of 9%.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

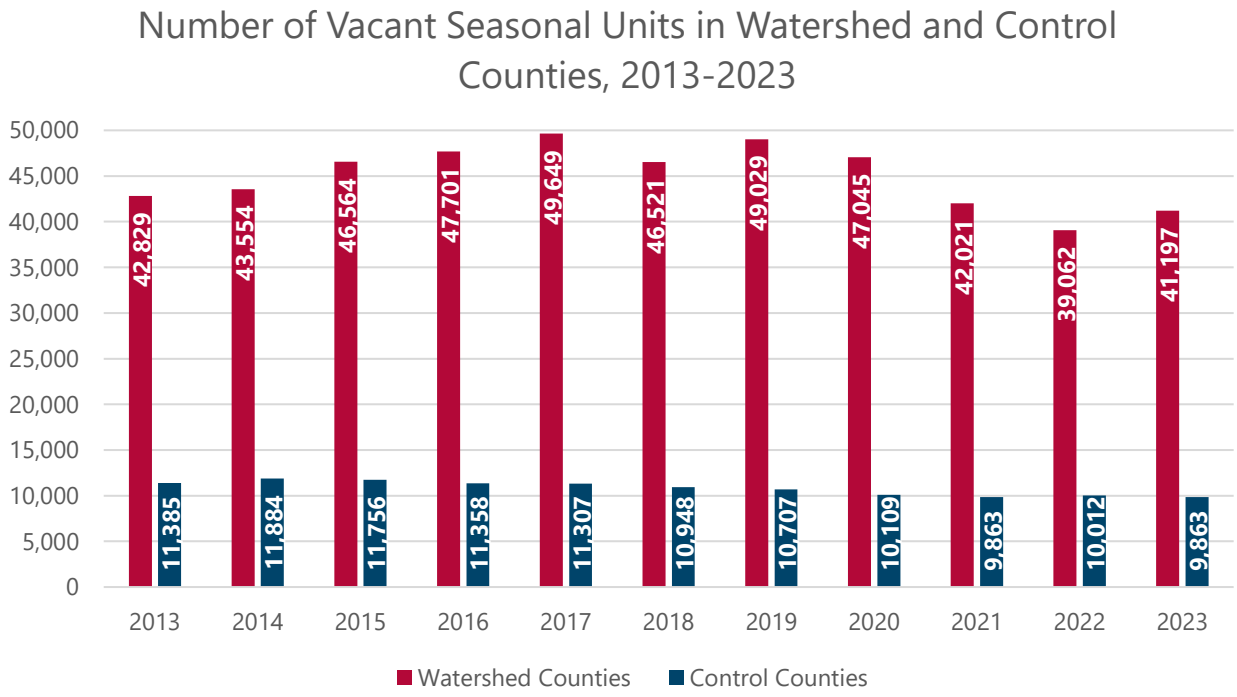
Towns Majority in the Watershed had higher average vacancy rates between 2013 and 2023, though a steady downward trend can be observed across the decade. Towns Marginally in the Watershed have consistently had the lowest vacancy rates.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

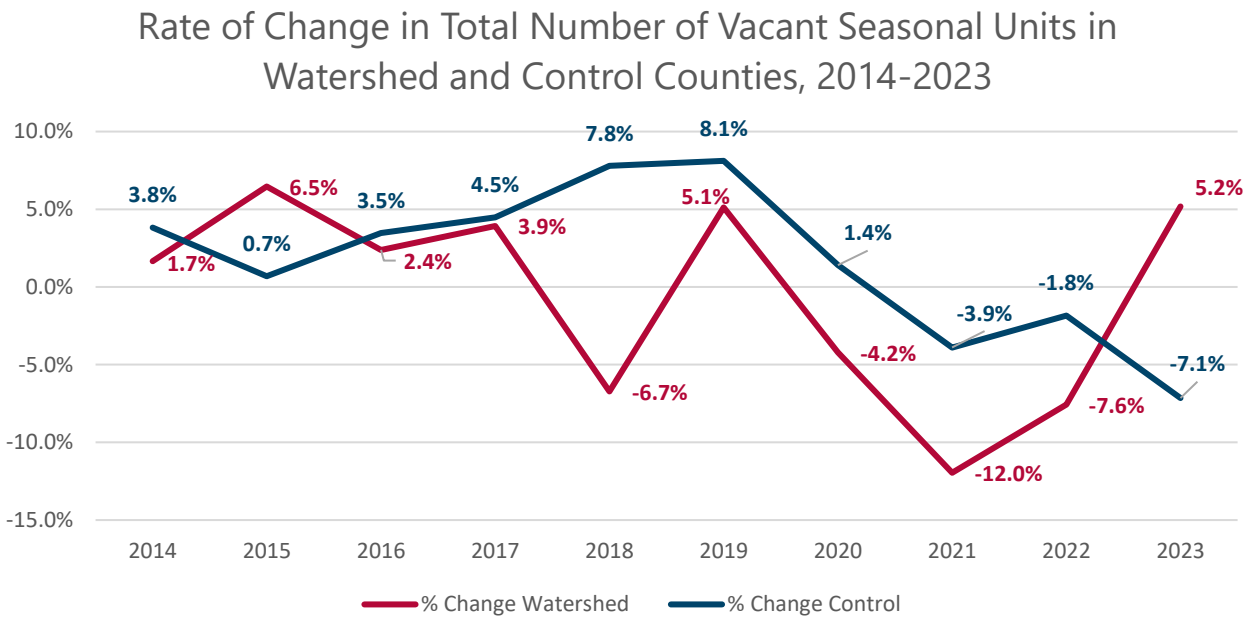
Based on rate of change comparisons for town Watershed proportion, towns Substantially in the Watershed experienced the most volatility in the total number of vacant housing units, increasing by 22% between 2018 and 2019, and decreasing by as much as 78% between 2020 and 2021. Towns Majority in the Watershed showed the steadiest rates, fluctuating between increasing vacant units by 12% and decreasing vacant units by 14%.

Seasonal & Recreational Housing Units



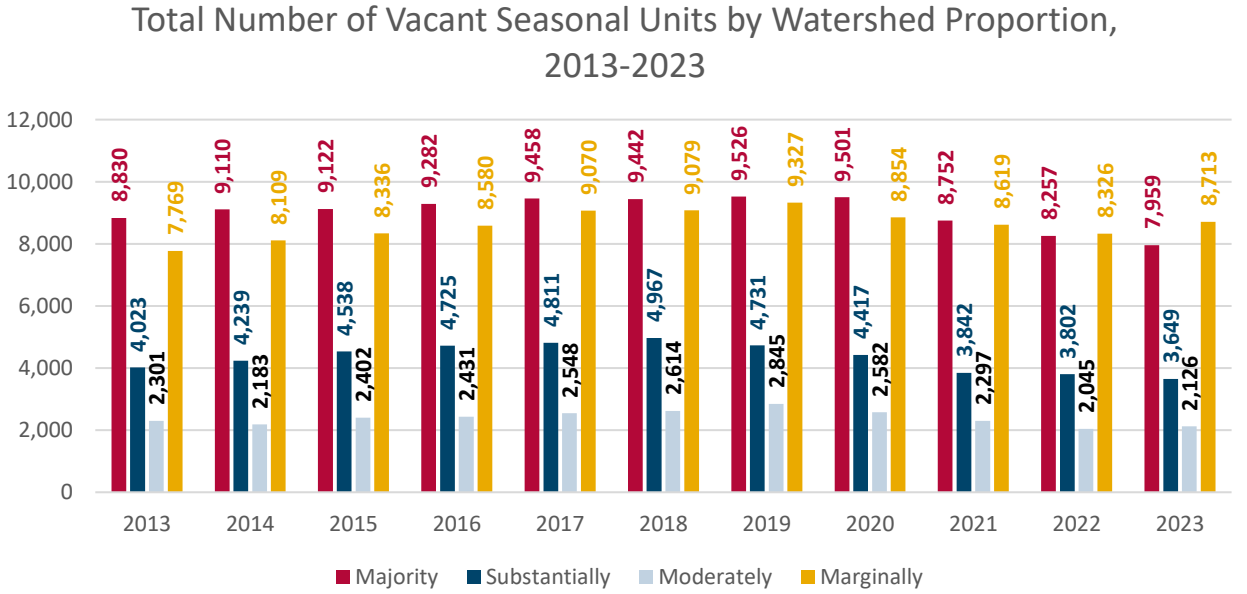
Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Between 2013 and 2023, there were far more seasonal units in Watershed counties than in Control counties. This points to the Watershed counties as being popular for second homeowners, vacationers, and short-term rentals.



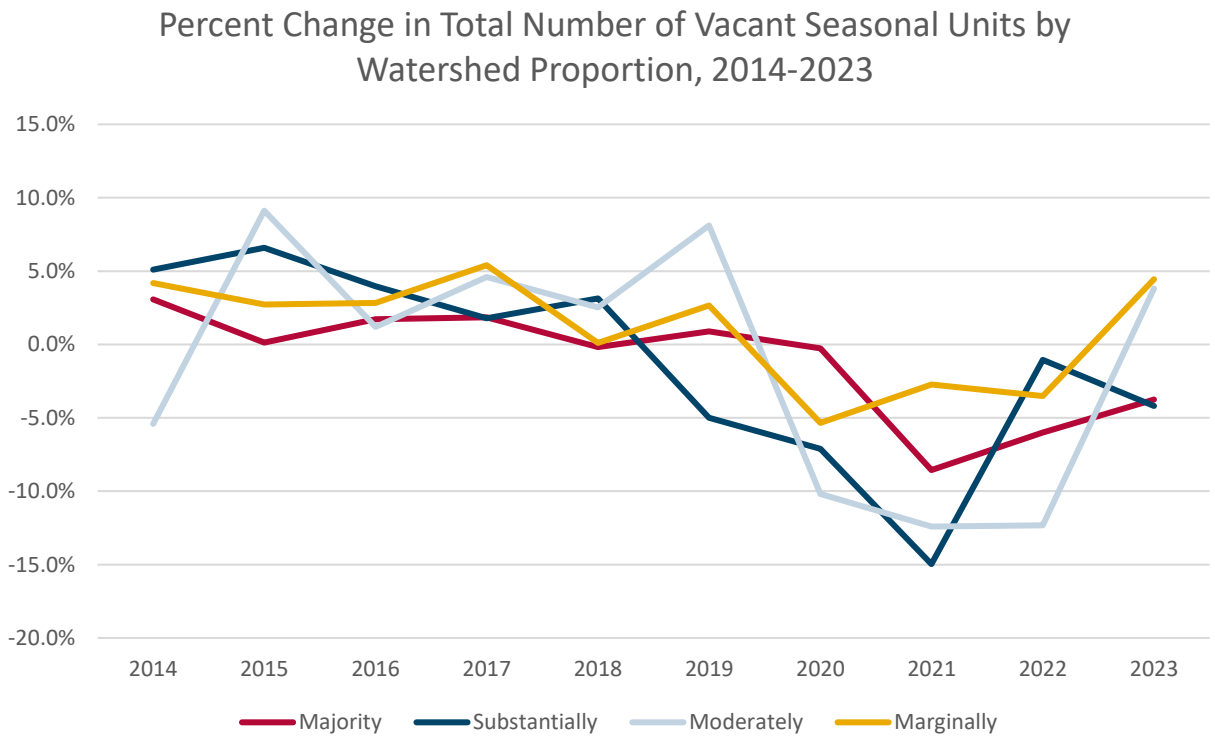
Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

In terms of rate of change, Watershed counties showed more volatility in the total number of vacant seasonal units, especially between 2018 and 2023, ranging from a decrease of 12% to an increase of over 5%. Control counties showed less volatility between 2014 and 2023 but also recorded higher percentage increases of total vacant seasonal units, peaking at an increase of over 8% in 2019. Since 2019, percent changes in total vacant seasonal units in Control counties have been steadily decreasing and showed a converse trend to Watershed counties in 2023.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

The number of vacant seasonal units was highest in towns Majority in the Watershed, suggesting that the Watershed is a popular vacation or second-home destination. However, towns Marginally in the Watershed also recorded high numbers of vacant seasonal units. Towns Majority in the Watershed saw declines in vacant seasonal homes over the decade while those Marginally in the Watershed had increases in vacant seasonal homes. This indicates that the Watershed may be declining as a second-home/vacation destination and that towns Marginally in the Watershed are increasing.



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

Looking at changes over time in the total number of vacant seasonal units, towns Majority in the Watershed remained relatively steady in terms of percent change in vacant seasonal units until 2021 when these percentages started to increase. A similar trend was observed in towns Substantially in the Watershed, though with steeper decreases between 2019 and 2021 and a sharp increase in 2022. Towns Moderately in the Watershed showed the most volatility with distinct rate changes in the total number of seasonal vacant units, peaking in 2015 and 2019. Towns Marginally in the Watershed had stable rates of change up until 2020 when rates began to increase.

Short-Term Rental Listings

County	Active Airbnb Listings	Month with Most Expensive Rates	Average Annual Revenue of an STR	Average Daily Rate (ADR)	Occupancy Rate
Delaware	784	August	$27,246	$274	45%
Greene	1,374	August	$40,920	$392	43%
Schoharie	161	August	$20,737	$269	45%
Sullivan	1,107	August	$33,464	$352	47%
Ulster	1,858	August	$41,540	$350	54%
Columbia	689	August	$45,654	$385	55%
Chenango	128	August	$19,589	$192	51%
Otsego	663	July	$41,777	$359	66%

Source: Rabbu 2025

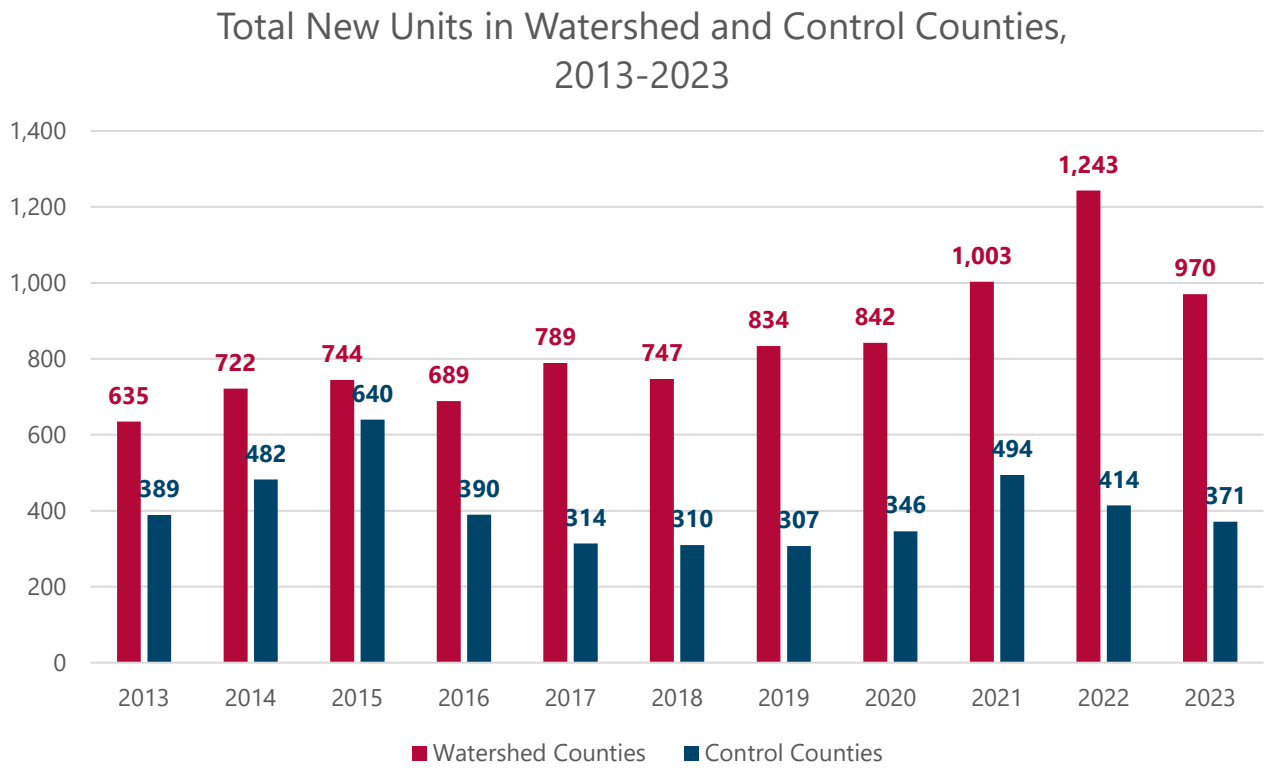
In 2025, Watershed counties had 5,284 active Airbnb Listings. The most profitable month for Airbnb operators in the Watershed counties was August and the average annual revenue of a short-term rental (STR) was $32,781. The average daily rate of Airbnbs in the Watershed counties was $327, and the occupancy rate was 47%.

Comparatively, Control counties had 1,480 active Airbnb listings and the most profitable month was either July or August. The average annual revenue for an STR in Control counties was $35,763, the average daily rate $312, and the occupancy rate 57%. Although Control counties have fewer active listings, these listings were more profitable for owners and occupancy was 10 percentage points higher. Daily rates were about 5% higher in Watershed counties.

Airbnbs in Watershed and Control counties were about the same in size (number of bedrooms), with 26-28% of listings in both areas having three bedrooms. In Watershed and Control counties, most Airbnbs had one to three bedrooms.

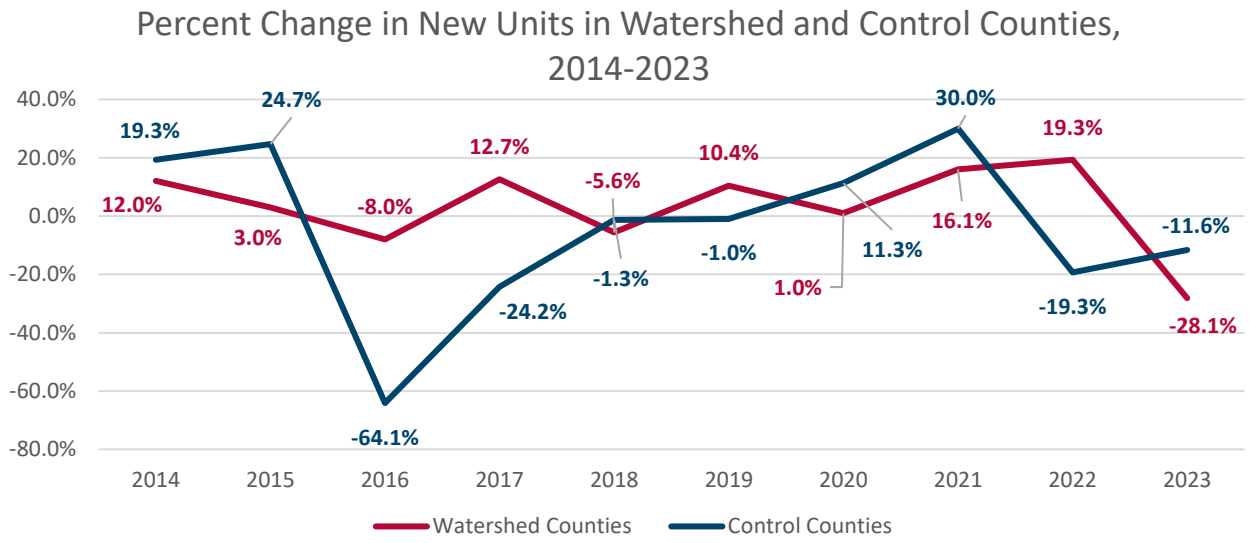
New Housing Starts and Permits Issued

New housing starts and building permits can be tracked through the U.S. Census Building Permits Survey (BPS). The BPS provides comprehensive data on new privately owned residential construction across the country, including the number of permits issued by residential unit type and the valuation of new permits. Tracking building permit data highlights hot spots of housing growth, periods of stagnation, or decline. Additionally, because housing permits are granted before construction starts, they give advance notice of where and how much construction will happen, helping forecast housing supply and market trends.



Source: US Census Bureau Building Permit Survey (BPS)

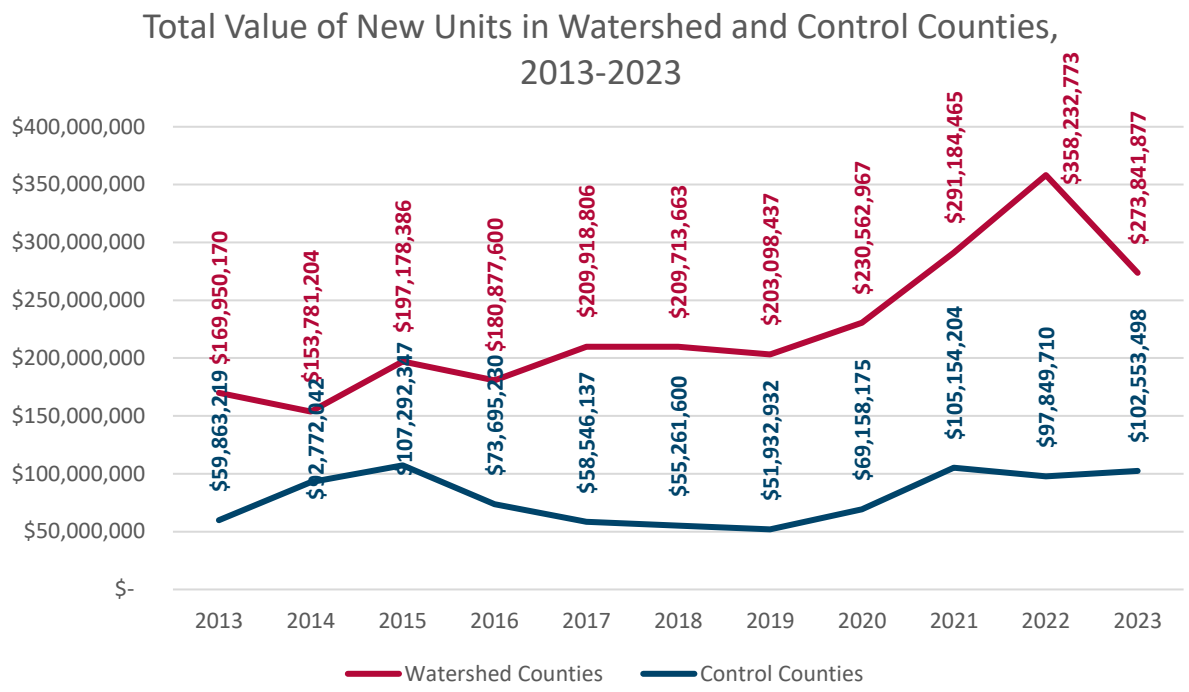
In every year between 2013 and 2023, Watershed counties issued significantly more permits than Control counties. In general, Watershed counties had an upward trend, with some year-to-year variation. Notably, there was a jump in the number of new units constructed between 2020 and 2022, reflecting a pandemic construction boom. Control counties were more stable in terms of new unit construction, with small spikes in 2015 and 2021.



Source: US Census Bureau Building Permit Survey (BPS)

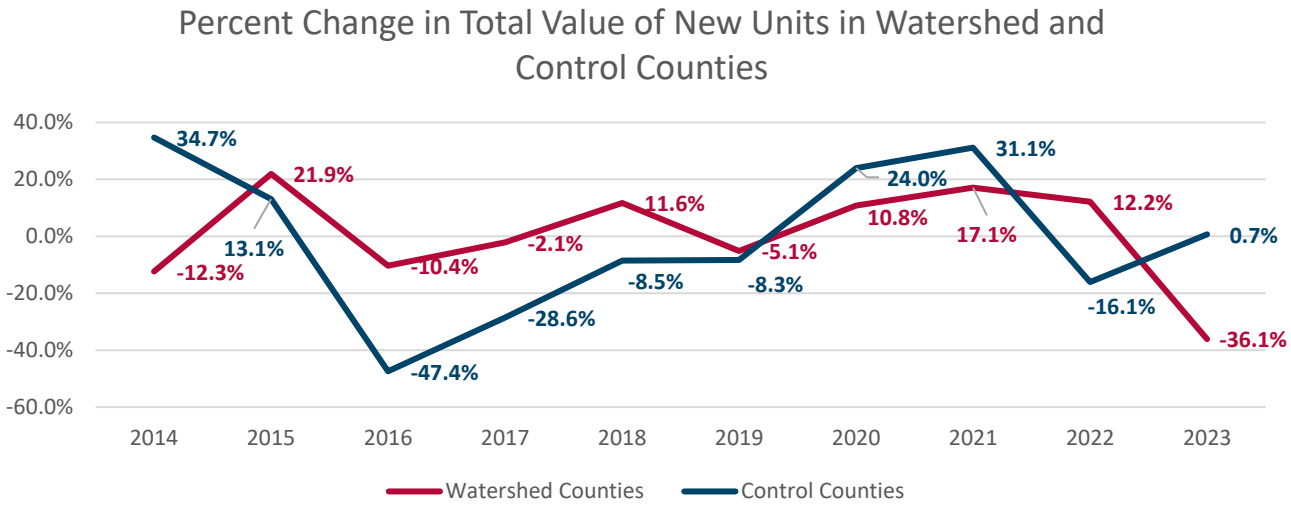
Looking at the rate of change in new units in Watershed and Control counties, Watershed counties were steadier in terms of the total number of new units built year-over-year. The highest percentage increase in new units in Watershed counties occurred between 2021 and 2022 at an increase of over 19%. The highest percentage decrease was seen the following year (between 2022 and 2023), with new unit construction falling by over 28%. Control counties were much more volatile in terms of rate of change in new housing units. The highest percentage increase in new units in Control counties was observed between 2020 and 2021 at a 30% increase. The highest percentage decrease in Control counties was seen between 2015 and 2016 with a decrease of over 64% in new housing units.

Value of New Units



Source: US Census Bureau Building Permit Survey (BPS))

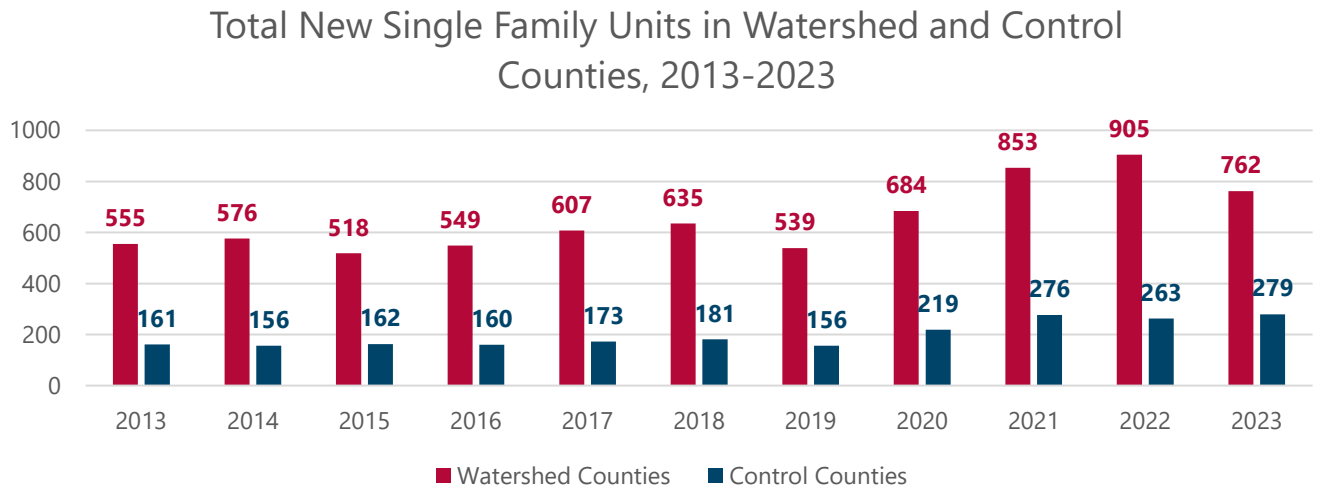
Adjusted for inflation, the value of new housing permits varied over the decade, tracking with the number of permits issued. Watershed counties had consistently higher levels of valuation from 2013 to 2023. Notably, the drop in new permits in 2023 – and therefore the total valuation of permits – in Watershed counties may indicate a slowing down of the market and a reversal of the past year's trends.



Source: US Census Bureau Building Permit Survey (BPS)

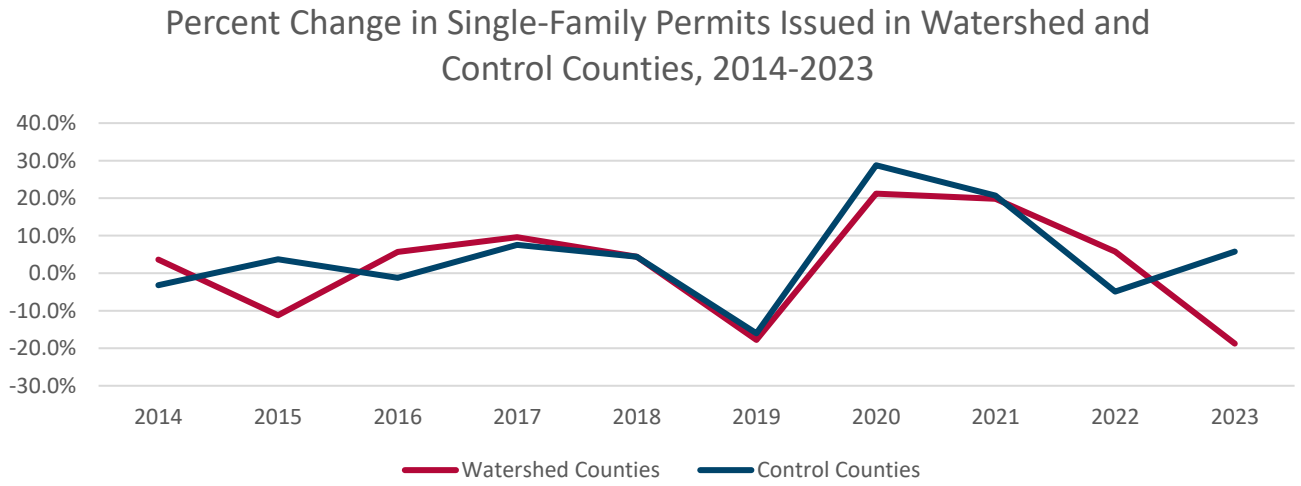
For the rate of increase for the total value of new units, there were consistent value increases in Watershed counties between 2015 and 2017, with slight dips between 2018 and 2019, then increases again between 2020 and 2022. Notably, there are steep dips in change in total value in new units in Watershed counties between 2013 and 2014 and 2022 and 2023, capping the decade with periods of low values of new units.

Type of Permits



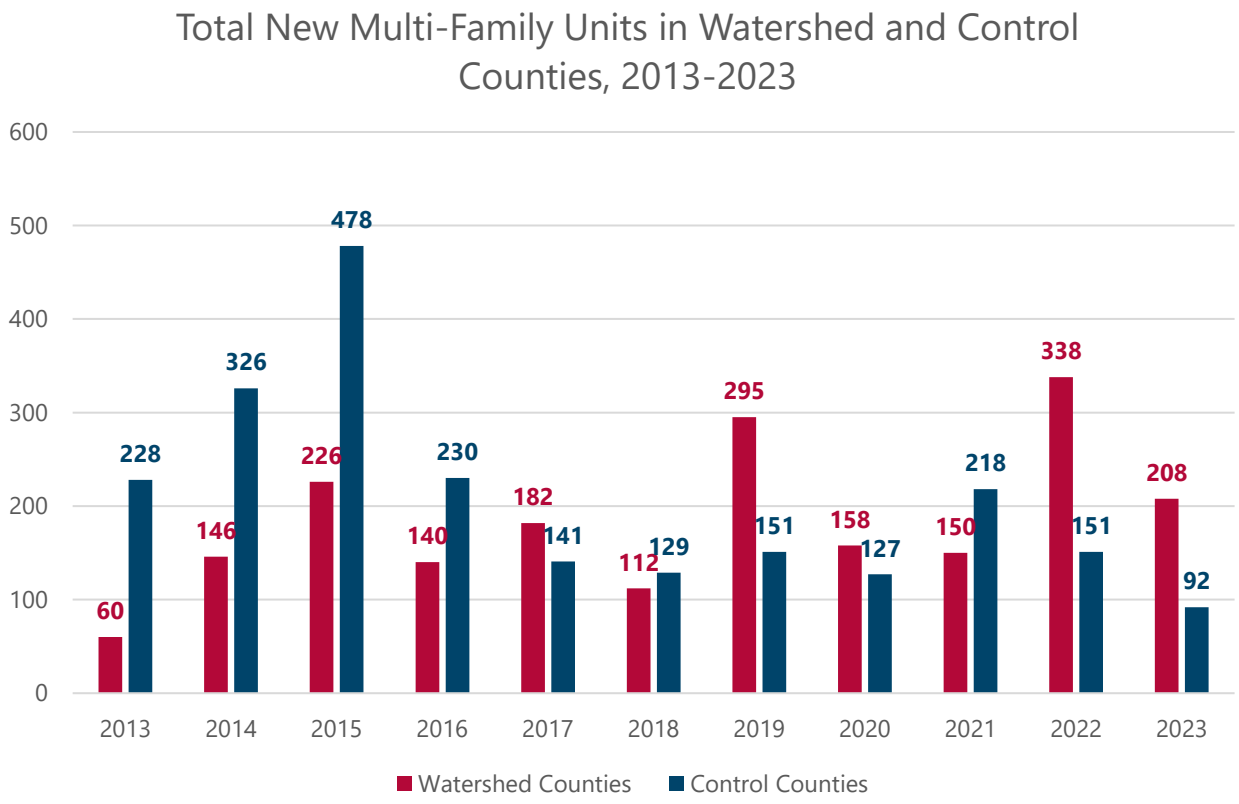
Source: US Census Bureau Building Permit Survey (BPS)

Looking at permits by type of residential housing, Watershed counties had far more new single-family homes than Control counties over the decade. The number peaked in Watershed counties between 2021 and 2022, indicating a construction spike during and immediately after the COVID-19 pandemic. This could suggest that more people were looking to move into larger homes in less populated areas during this time, a trend that was seen across the country. Control counties also experienced a small increase in single-family permits during these years.



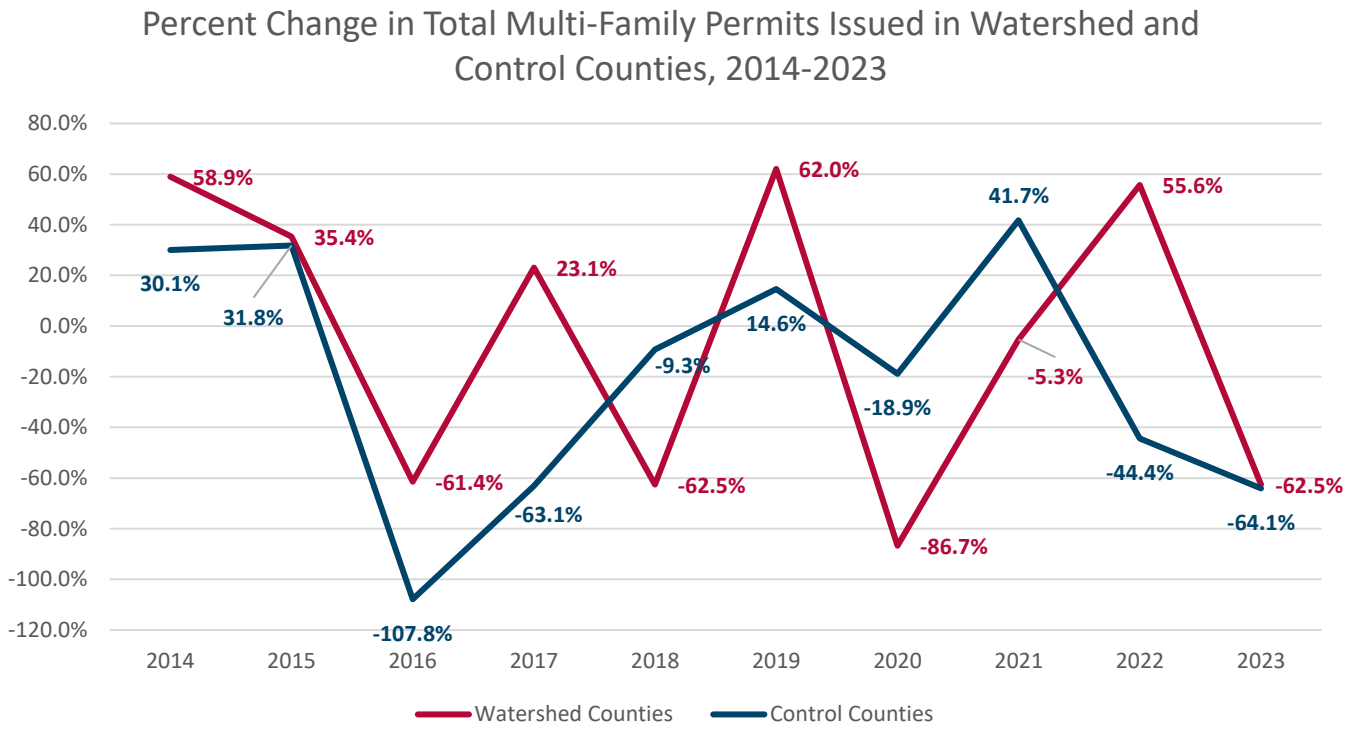
Source: US Census Bureau Building Permit Survey (BPS)

The rate of change in the number of permits issued for single-family homes remained consistent between 2016 and 2020. In the bookend years (2014, 2015, 2021, 2022, and 2023), trends diverged in the two areas, though only by a few percentage points. During these years, Watershed counties generally had negative trends in the issuance of single-family permits while Control counties recorded slightly higher percentage changes.



Source: US Census Bureau Building Permit Survey (BPS)

At the beginning of the decade, permits for multi-family development in Control counties far outnumbered those for Watershed counties. In Control counties, there was a significant drop in new multi-family permits issued from 2015 to 2016. In 2019, Watershed counties issued more multi-family permits by nearly double those in Control counties.



Source: US Census Bureau Building Permit Survey (BPS)

The rate of change in the issuance of multi-family housing permits was very volatile in Watershed counties, essentially completely shifting trends every other year. The greatest increase in the percent change in multi-family permits was between 2018 and 2019, showing a nearly 100% increase in the Watershed. Though there are fewer multi-family permits issued in general (in both Watershed and Control counties), this data shows the variability of this part of the housing market.

In Control counties, the rate of change in the issuance of multi-family permits also shifted immensely over the decade, with the largest drop in issuances occurring between 2015 and 2016. From 2017 on, the rate of change in this market was slightly less variable than in Watershed counties, though it still showed year-over-year change that was much less steady than the issuance of single-family permits.

Foreclosure Rates/Derelict Properties

To examine how being located in the Watershed may impact rates of foreclosure or derelict property listings, the CGR Consulting Team gathered data from county foreclosure auction records and lists of county-owned tax-default properties. Many counties conduct yearly public auctions for tax-foreclosed real estate.

Limitations

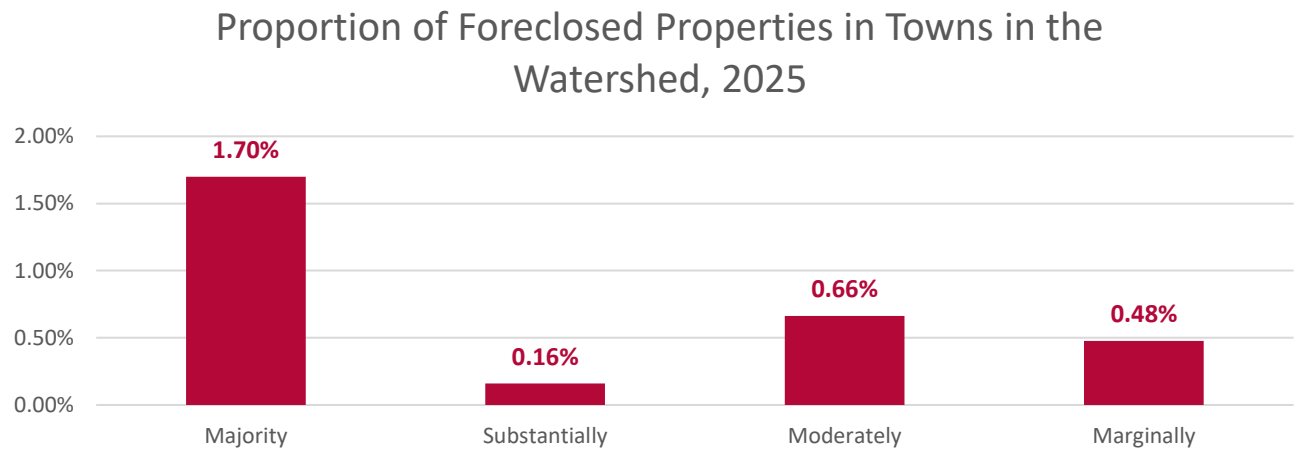
The rate of these auctions makes year-over-year foreclosure rate comparisons difficult across the Watershed geography. For mortgage foreclosures, there is no single public list aggregating all foreclosed homes by county since these properties go through judicial proceedings.

Additionally, New York State imposed a state-wide foreclosure moratorium from 2020-2021 due to the effects of the COVID-19 pandemic. There was a noticeable spike in 2022 to 2023 after many counties postponed foreclosures, leading to backlogged auctions. For example, Ulster County's foreclosure auction was originally scheduled for 2023, but was deferred and combined into a large 2024 sale with over 100 parcels listed.

Analysis

In both Watershed and Control counties, a small portion of the total housing units were listed as foreclosed in 2025. In Watershed counties, this was 0.42%. In Control counties, 0.33%.

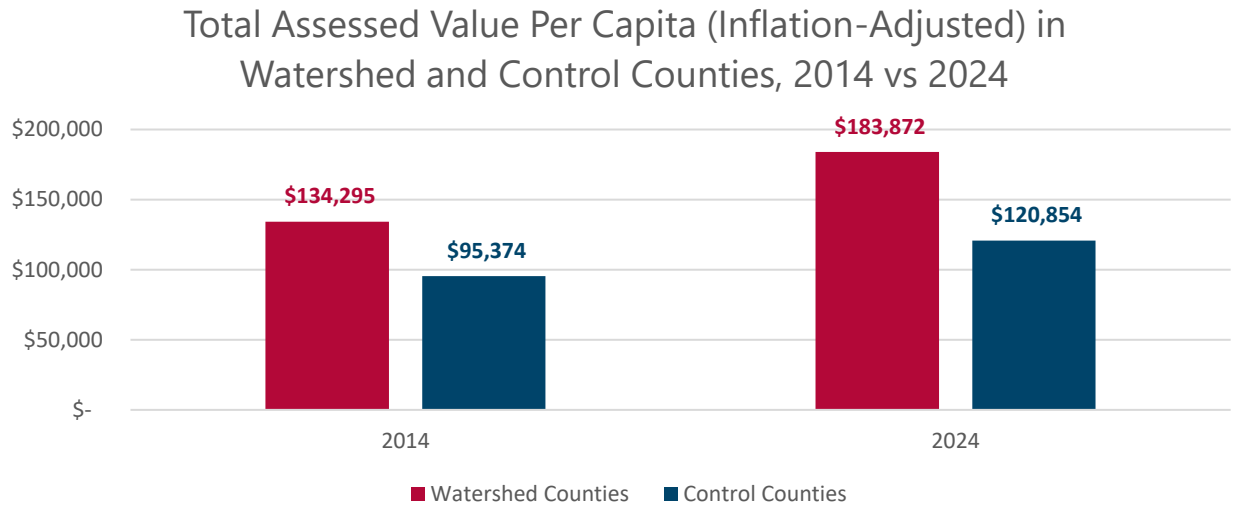
Across all five counties, residential properties dominated foreclosure lists. This included single-family homes, multi-family homes, mobile homes, and especially vacant residential land. Vacant lots – often a result of failed subdivisions or unpaid inherited land – are frequently foreclosed for taxes since owners may walk away from land that has little market value or utility. Owner-occupied homes typically appear on foreclosure rolls, typically lower-value or distressed homes. Commercial properties such as storefronts, hotels, or large tracts that are zoned commercially are comparatively rare. When they do appear, they often represent closed businesses or vacant commercial land.



Source: RealtyTrac

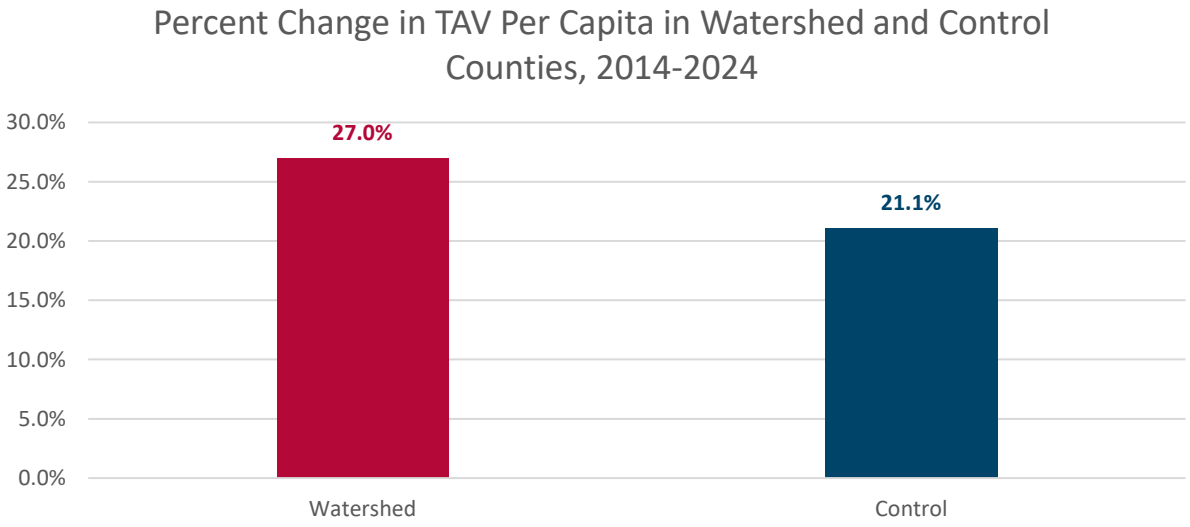
In 2025, just 1.7% of housing units in towns Majority in the Watershed were listed as tax foreclosures; however, this was the highest out of all other town groups in the Watershed.

Total Assessed Value (TAV) Per Capita



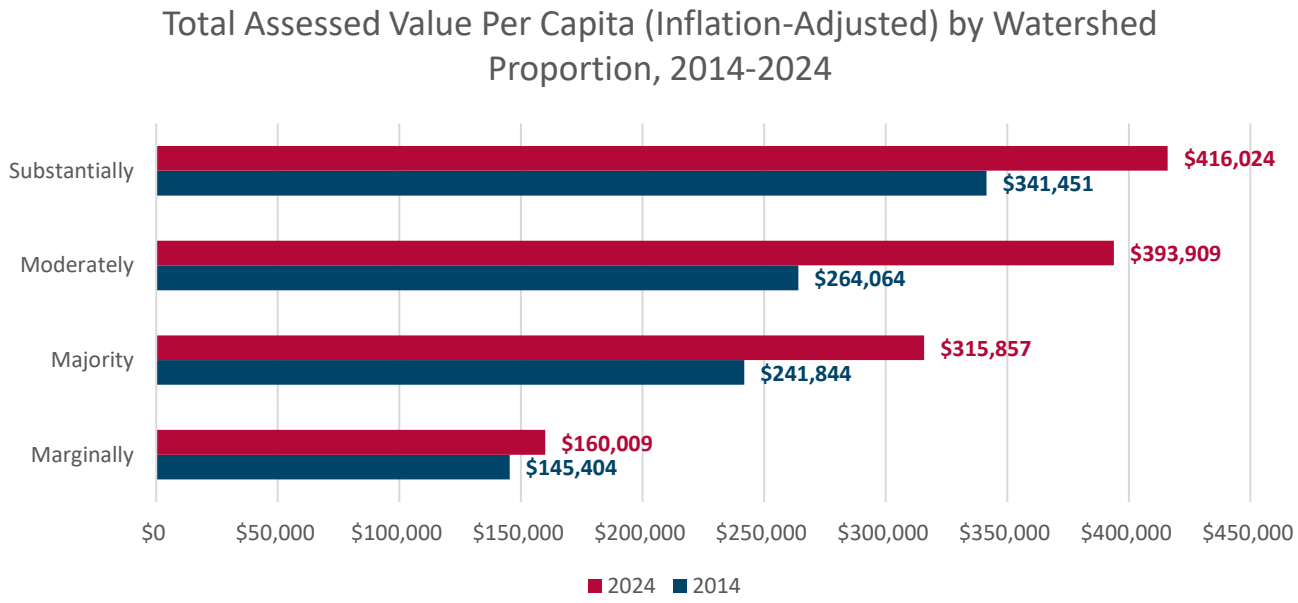
Source: New York State Department of Taxation and Finance, Municipal Profiles

Watershed counties experienced an increase of just under $50,000 in Total Assessed Value (TAV) per capita between 2014 and 2024. Control counties experienced about half that increase, rising by just over $25,000 over the same time.



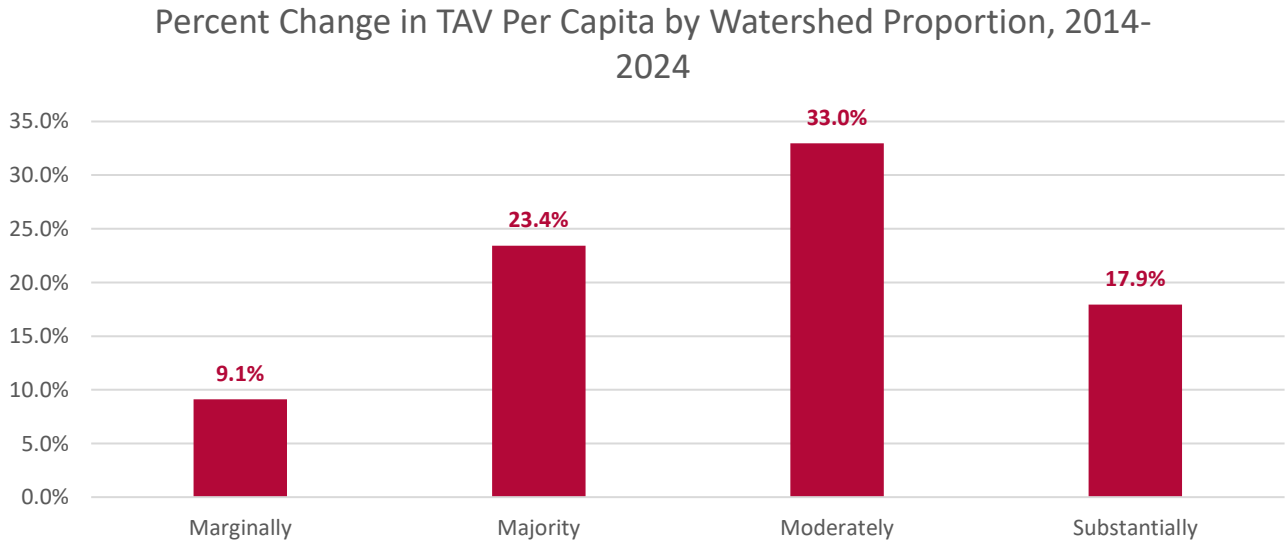
Source: New York State Department of Taxation and Finance, Municipal Profiles

Comparing rates of change in Watershed and Control counties, a 27% increase in TAV per capita in Watershed counties was recorded between 2014 and 2024 while a 21.1% increase in Control counties was recorded.



Source: New York State Department of Taxation and Finance, Municipal Profiles

Towns in the Watershed saw increases in TAV per capita between 2014 and 2024 with no significant trends shown based on Watershed proportion. As of 2024, towns Substantially in the Watershed had the highest TAV per capita, at about $416,000.



Source: New York State Department of Taxation and Finance, Municipal Profiles

When comparing the rate of change between towns in the Watershed, towns Moderately in the Watershed saw the largest increase in TAV per capita – an increase of 33% between 2014 and 2024.

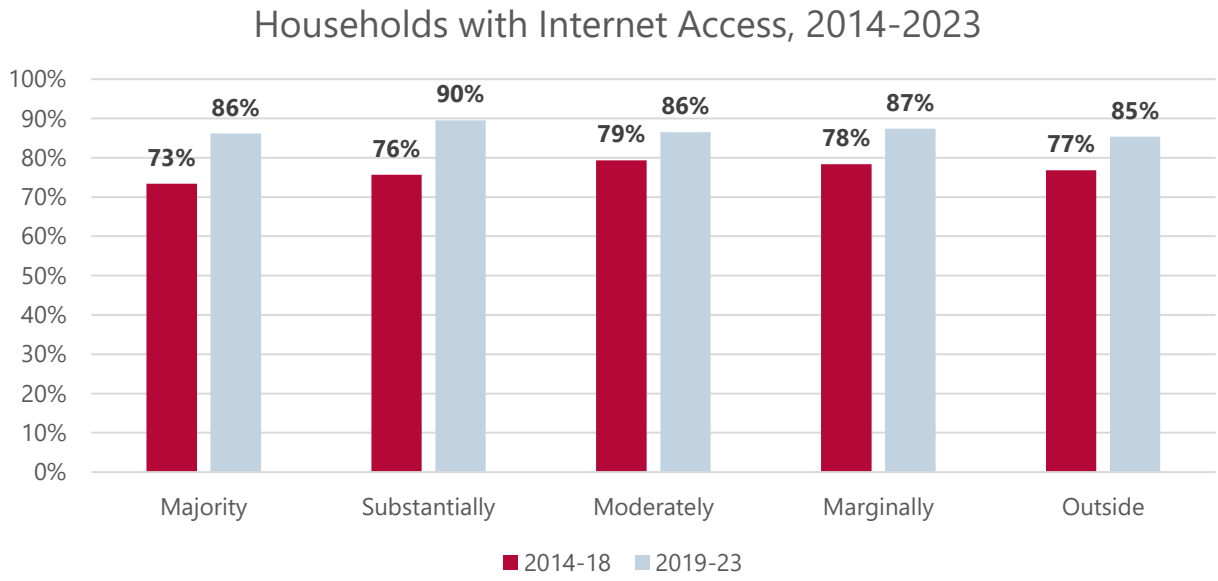
Effective Local Government, Infrastructure, and Citizen Engagement

Key Findings

- **Households with internet access:** Both towns inside and outside the Watershed showed improvement in the average share of households with internet access from 2014-18 to 2019-23, and all town groups had similar rates.
- **Local government general property tax levy (county tax rate per $1,000):** Watershed counties had higher county tax rates than the Control counties through most of 2014-24. However, both Watershed and Control counties experienced a gradual decline in county tax rate over time. The gradual decline in rate was influenced both by the county's tax levy and the assessed value of the property.
- **Local government general property tax levy (municipal tax rate per $1,000):** Towns outside the Watershed had higher average municipal tax rates than all Watershed towns (except those that are Marginally in the Watershed), until 2022 when the tax rate started to decline and more closely aligned with the rates of the Watershed towns. The gradual decline in rate was influenced both by the municipalities' tax levy and the assessed value of the property.
- **Voters registered per capita**: Overall, it does not appear that there is a difference between towns inside and outside the Watershed in terms of the rate of voter registration per capita and there remains a relatively high level of voter registration rates in all town groups.
- **Population served by community water systems:** 19 of the 41 Watershed towns had community water supplies that served some part of the population (20,675 people served). Towns that were Majority in the Watershed had the most towns served by a community water supply system (13 towns) which served the most people (16,369).
    - By comparison, the Control towns (outside Watershed) had the second most towns served by a community water supply system (9 of 11 Control towns) which served the second most people (14,642) of all town groups.
    - The data included people served by a community water system at both residences and commercial locations with transient populations (e.g., Ski Windham); **because of this, we were unable to calculate the percentage of residents in a town that are served by a community water system (i.e., the population served does not match the residential population of a community with some people using a water system at a commercial attraction).**
- **Wastewater access and capacity remaining across the Watershed:** Delaware County had the most public sewer infrastructure of all Watershed counties with 15 municipally owned wastewater treatment facilities (WWTF) and 2 DEP owned WWTFs (collective county wide capacity of 5.16 MGD and capacity remaining of 1.54 MGD, 30%); meanwhile, Schoharie County and Sullivan had the least public sewer infrastructure of the Watershed counties

with 1 municipally owned WWTF in Schoharie (no DEP) and 1 DEP owned WWTF in Sullivan (no municipal).

Households with Internet Access



Source: US Census Bureau's 2023 American Community Survey (ACS) 5-year data

The analysis of household internet access shows clear improvement across both towns inside and outside the Watershed. There does not appear to be a negative effect of being inside the Watershed on household access to internet.

All groups in the Watershed have a high level of access to internet.

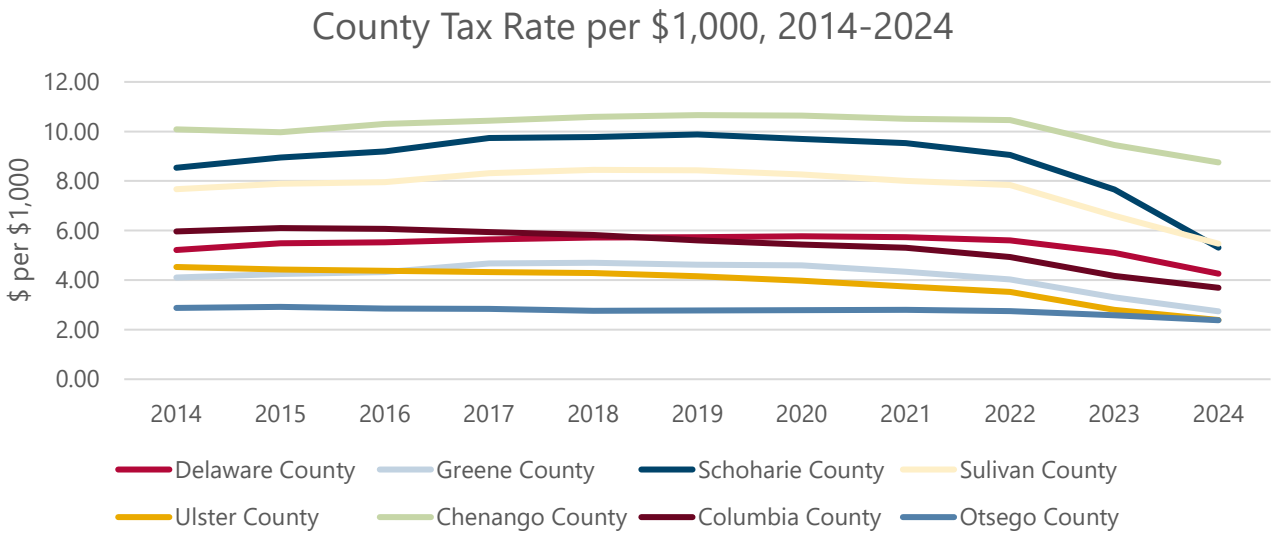
Towns outside the Watershed also saw an improvement in the number of households with access to internet access, increasing from 76.8% to 85.3%. In 2023, the towns outside the Watershed had the lowest percentage of households with access to internet, but only slightly lower than all town groups inside the Watershed.

Local Government General Property Tax Levy

County Tax Rate per $1,000

As the total assessed value (TAV) of property rises, governments can often keep tax rates level or even lower them and raise the same amount of funding for operations (the total tax levy). That is what we see in the Watershed, where the tax rate has been declining over the last 10 years as the TAV has been increasing (refer to the TAV Section for details).

The figure below shows the county tax rate per $1,000 from 2014 to 2024 for both Watershed and Control counties.

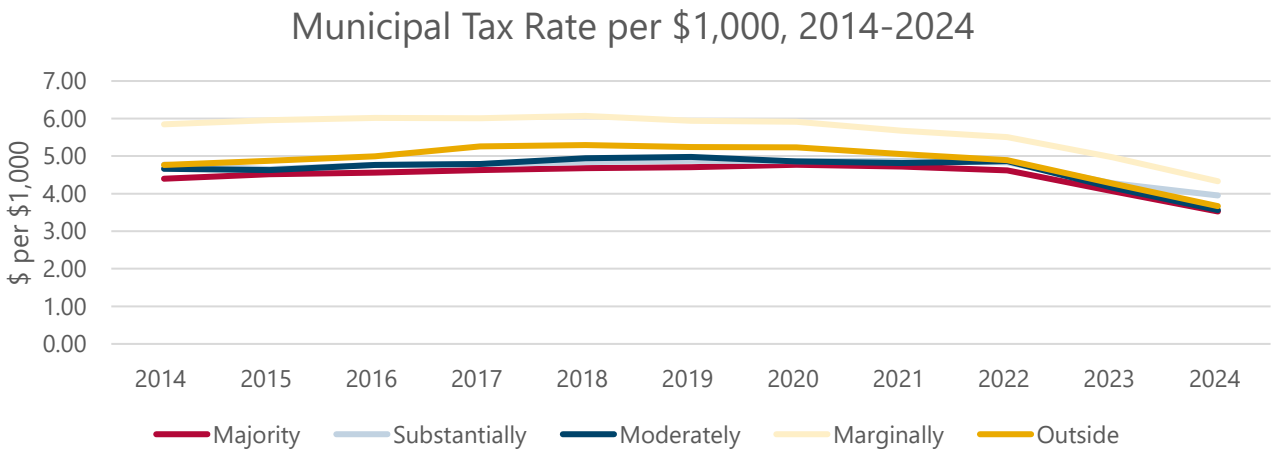


Source: NYS Office of Real Property Tax Services (ORPTs) Municipal Data Portal

Both Watershed and Control counties experienced a gradual decline in county property tax rates over time. A gap between Watershed and Control counties narrowed slightly by 2024. Overall, Watershed counties had higher tax rates than the Control counties through most of 2014-2024, although Chenango County had the highest rate overall throughout the entire decade.

In the Watershed counties, Schoharie County had the highest tax rate per $1,000 until 2024 when it dipped just below Sullivan County after having the largest change of any county (8.54 in 2014 to 5.31 in 2024), with Sullivan becoming the highest tax rate at 5.47. Ulster County decreased steadily between 2014 to 2024 to have the lowest tax rate at 2.38.

Municipal Tax Rate per $1,000

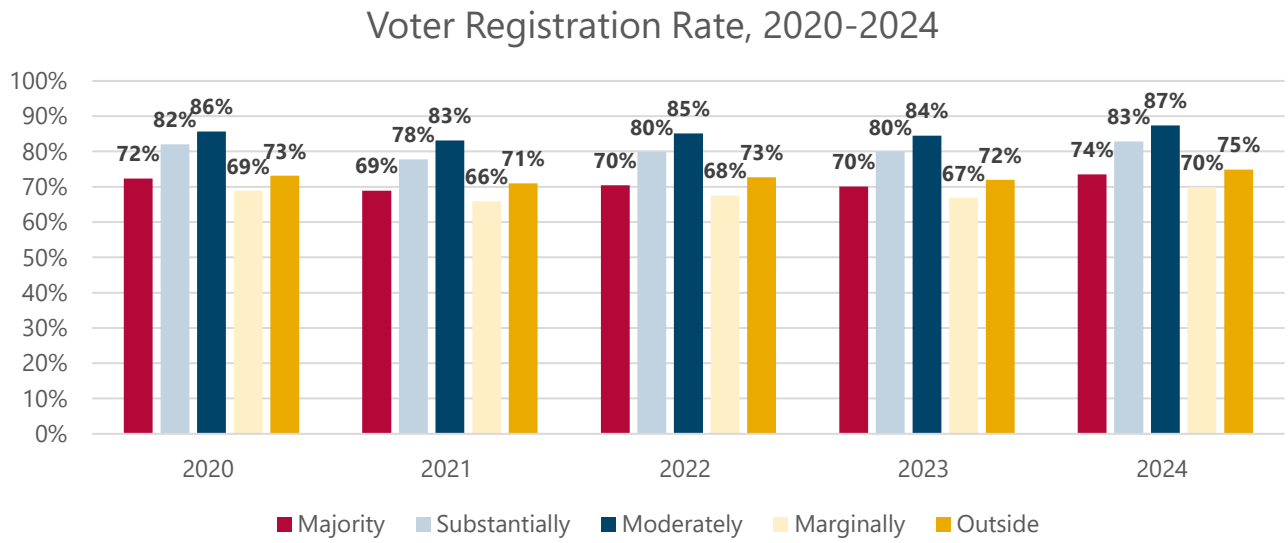


Source: NYS Office of Real Property Tax Services (ORPTs) Municipal Data Portal

Towns outside the Watershed had a higher average municipal tax rate than all Watershed towns (except those that are Marginally in the Watershed), until 2022 when the average rate started to decline in towns outside the Watershed and aligned more closely with the average rates of the Watershed towns.

Voters Registered per Capita

This metric measures the number of registered voters per capita for Towns inside and outside the Watershed from 2020 to 2024 by dividing the number of registered voters by the total population of the area.



Source: New York State Board of Elections, US Census Bureau

Overall, it does not appear that there is a difference between towns inside and outside the Watershed in terms of the rate of voter registration per capita and there remains a relatively high level of voter registration rates in all town groups.

Looking within the Watershed, towns that are Moderately in the Watershed have consistently had the highest average rate of voters registered over the five-year period (ranging from 86% to 87%) while towns that are Marginally in the Watershed have consistently had the lowest rates of registration (ranging from 66% to 70%).

Towns outside the Watershed showed more fluctuation, beginning with a high of 86% in 2020, dropping sharply to 71% in 2021, and then gradually recovering to 75% in 2024.

Population Served by Community Water Systems

Access to a community water system[19] contributes to community vitality because it provides convenient, reliable and safe potable water, leading to better public health and supporting the economy by creating jobs and attracting businesses. Additionally, community water systems offer reliable and safe water supply for households (sometimes eliminating the need for time consuming and costly testing, treatment, and repairs/maintenance) and critical situations like fires or disasters.

Town	County	Amount in Watershed	Pop. Served by Community Water System (# people)
Majority in Watershed			
Delhi	Delaware	Majority	4,094
Windham	Greene	Majority	3,183
Walton	Delaware	Majority	3,175
Shandaken	Ulster	Majority	1,427
Middletown	Delaware	Majority	1,400
Roxbury	Delaware	Majority	961
Stamford	Delaware	Majority	700
Prattsville	Greene	Majority	375
Hamden	Delaware	Majority	311
Andes	Delaware	Majority	260
Ashland	Greene	Majority	233
Bovina	Delaware	Majority	142
Jewett	Greene	Majority	108
		Total:	**16,369**
Substantially in Watershed			
Hunter	Greene	Substantially	1,859
Denning	Ulster	Substantially	688
Kortright	Delaware	Substantially	350
Olive	Ulster	Substantially	75
Conesville	Schoharie	Substantially	54
		Total:	**3,026**
Marginally in Watershed			

[19] A community water system is a public water system that serves the same people year-round. Most residences including homes, apartments, and condominiums in cities, towns and mobile home parks are served by community water systems. Examples of community water systems include municipally owned (cities, towns, or villages) public water supplies, public water authorities, or privately-owned water suppliers such as homeowner associations, apartment complexes, and mobile home parks that maintain their own drinking water system.

Jefferson[20]	Schoharie	Marginally	1,280
		Total:	**1,280**
Control (Outside Watershed)			
Saugerties	Ulster	Outside	4,200
Rockland	Sullivan	Outside	2,500
Athens (V)	Greene	Outside	1,700
Middleburgh	Schoharie	Outside	1,500
Town of Shawangunk (Hamlet of Wallkill Water District)	Ulster	Outside	1,500
Cairo	Greene	Outside	1,400
Hancock (V)[21]	Delaware	Outside	1,182
Esperance (V)	Schoharie	Outside	560
Davenport	Delaware	Outside	100
		Total:	**14,642**

Source: Data from NYS DOH, table created by CGR Consulting Team

The data presented above shows that 19 of the 41 Watershed towns had community water supplies that served some part of the population. These systems served a total of 20,675 people. Of the Watershed towns with access to community water supplies:

- 9 were in Delaware County with 11,393 people served (making up 53% of the Delaware County towns in the Watershed)
- 5 were in Greene County with 5,758 people served (making up 71% of the Greene County towns in the Watershed)
- 3 were in Ulster County with 2,190 people served (making up 30% of the Ulster County towns in the Watershed)
- 2 were in Schoharie County with 1,334 people served (making up 50% of the Schoharie County towns in the Watershed)
- 0 were in Sullivan County.

Of these 19 towns in the Watershed, 13 were Majority in the Watershed, 5 were Substantially in the Watershed, and 1 was Marginally in the Watershed.

9 of the 11 Control towns had community water supplies and served a total of 14,642 people.

Towns that were Majority in the Watershed had the most towns (of all town groups) served by a community water supply system (13) which served the most people (16,369). The Control

[20] The community water systems highlighted in the data in Jefferson also includes a well located in the Town of Harpersfield

[21] The V in this table represents a village inside of a town

towns had the second most towns served by a community water supply system (9) which served the second most people (14,642).[22]

Wastewater Access and Capacity Remaining Across the Watershed

A large portion of the Watershed is served by on-site wastewater systems such as septic tanks with leach fields; however, the Watershed does have several municipally owned wastewater treatment facilities (WWTF) and NYCDEP owned and operated WWTFs. Access to these facilities contributes to community vitality by facilitating development and economic growth and providing convenient disposal of sewage which reduces homeowner responsibility and protects water quality.

This analysis summarizes where there is capacity for development to be connected to a WWTF in the Watershed. This has policy implications for strategically choosing where to invest money in development projects to support economic development while protecting water quality through wastewater treatment.

Watershed Municipally Operated Public WWTFs

Name	County	SPDES Number	SPDES Monthly Average Limit (MGD)	% Capacity Remaining
Andes	Delaware	NY0262854	0.062	35%
Bloomville	Delaware	NY0263125	0.030	77%
Bovina Center	Delaware	NY0262927	0.025	68%
Delhi	Delaware	NY0020265	1.015	28%
Denver Sewer	Delaware	NY009562	0.035	66%
Fleischmanns	Delaware	NY0261521	0.16	60%

[22] The data includes people served by a community water system at residences and commercial locations (e.g., Ski Windham); because of this, the CGR Consulting Team was unable to calculate the percentage of residents in a town that are served by a community water system (i.e., the number of people served includes people visiting a town rather than solely residents).

Halcottsville	Delaware	Pumps to Margaretville	0.014	86%
Hamden	Delaware	NY0263133	0.026	58%
Hobart	Delaware	NY0029254	0.200	63%
New Kingston	Delaware	NY0263354	0.009	89%
Roxbury Sewer	Delaware	Pumps to Grand Gorge	0.100	70%
South Kortright	Delaware	NY0263290	0.020	75%
Stamford	Delaware	NY0021555	0.7	55%
Trout Creek	Delaware	NY0263290	0.016	63%
Walton	Delaware	NY0027154	1.55	10%
Ashland	Greene	NY0263214	0.026	69%
Hunter	Greene	NY0241075	0.3259	60%
Windham	Greene	NY0262935	0.445	39%
Prattsville	Greene	NY0263028	0.086	66%
West Conesville	Schoharie	NY0263346	0.015	80%
Boiceville	Ulster	NY0274038	0.075	79%

Source: Data from CWC, table created by CGR Consulting Team.

Of the 21 municipally owned WWTFs shown above, 15 (71%) were located within Delaware County, which had a total collective capacity of 3.96 MGD (i.e., all facilities' capacity added together), and collective 1.268 MGD of capacity remaining (32%).

Greene County had the next largest number of municipal WWTFs (4 - total collective capacity of 0.88 MGD and 0.44 MGD of capacity remaining, 50%) followed by Schoharie and Ulster County (both with 1; Schoharie with 0.015 MGD total and 0.012 MGD of capacity remaining, 80% / Ulster with 0.075 MGD total and 0.059 MGD of capacity remaining, 79%). There are no public WWTFs in Sullivan County.

DEP Owned Facilities

Name	County	SPDES Number	SPDES Monthly Average Limit (MGD)	% Capacity Remaining
Pine Hill	Ulster	NY0026557	0.5	70%
Grahamsville	Sullivan	NY0026549	0.18	30%
Tannersville	Greene	NY0026573	0.8	45%
Margaretville	Delaware	NY0026531	0.4	5%
Grand Gorge	Delaware	NY0026565	0.5	50%
Chichester	Ulster	NY0233943	-[23]	-

Source: Data from DEP, table created by CGR Consulting Team.

Ulster and Delaware Counties had the highest number of DEP owned facilities (2 each), followed by Greene and Sullivan Counties (1 each). There were no DEP owned facilities in Schoharie County.

- Delaware County had a total collective capacity of 1.2 MGD and 0.27 MGD of capacity remaining (22.5%).
- Ulster County had a total collective capacity (from the data provided) of 0.5 MGD and 0.35 MGD of capacity remaining (70%).

Health, Well-Being, and Public Safety

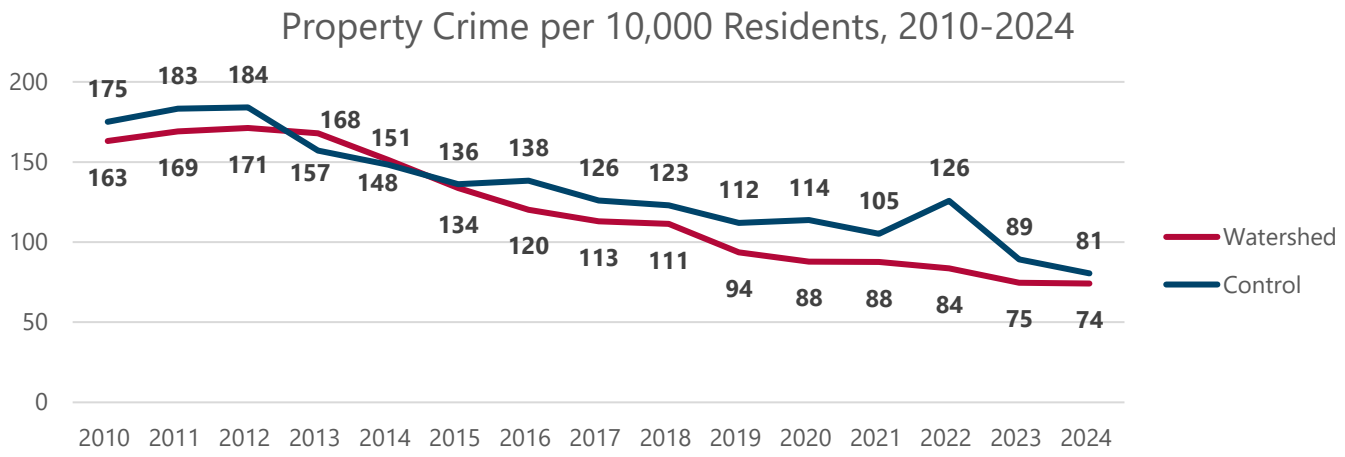
Key Findings

- **Property crime rate:** Both Watershed and Control counties experienced a steady decline in average property crime rates from 2010-2024, though the Control counties consistently reported slightly higher rates.
- **Violent crime rate:** Violent crime fell both inside and outside the Watershed from 2010 to 2024, with the Watershed counties experiencing higher average rates throughout most of the years but converging to be almost identical with the Control counties by 2024.
- **Numbers of members at fire departments:** Overall, Watershed counties tended to have higher average firefighter-to-resident ratios, suggesting potentially greater staffing or stronger volunteer participation compared to the Control counties.
- **Active physicians per 100,000 residents:** There was a persistent and significant disparity in the average healthcare provider availability, with the Control counties maintaining roughly three times as many active physicians as the Watershed counties.

[23] Data was not received for the Chichester facility on the SPDES Monthly Average Limit or % capacity remaining.

- **Mental health office clinic visits per 1,000 residents:** Both Watershed and Control counties experienced growth in the average mental health clinic utilization from 2013-23. By 2023, the utilization was almost identical in both the Watershed and Control counties.
- **Deaths from drug overdose per 100,000 residents:** Watershed Counties consistently experienced higher average overdose death rates than the Control counties from 2010 to 2022. The gap between Watershed and Control counties widened over time.

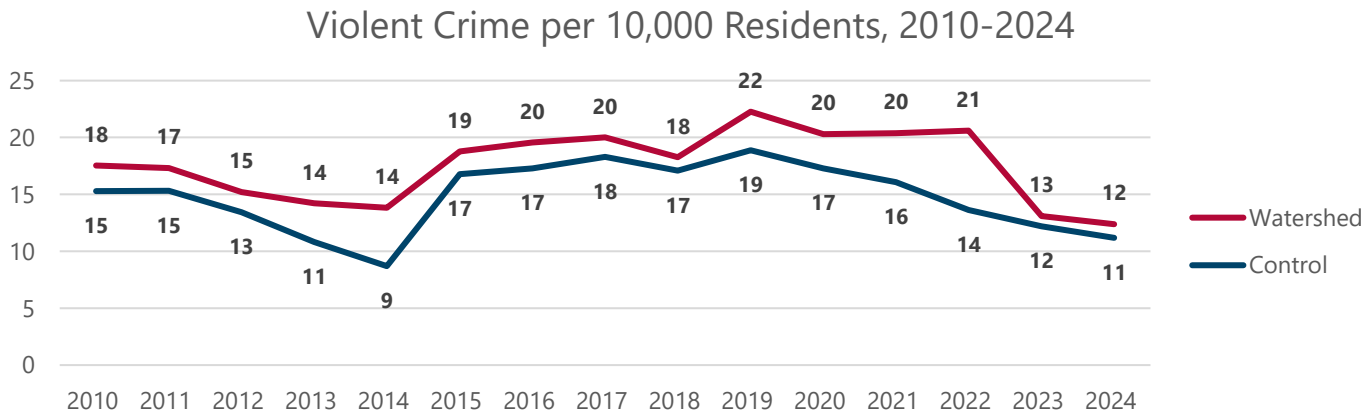
Property Crime Rate



Source: Federal Bureau of Investigation, New York State Division of Criminal Justice Services

Both Watershed and Control counties experienced a steady decline in property crime over the period, though the Control counties consistently reported slightly higher rates over the 14-year span. By 2024, both Watershed and Control counties had dropped significantly to similar average levels of 81 and 74, respectively.

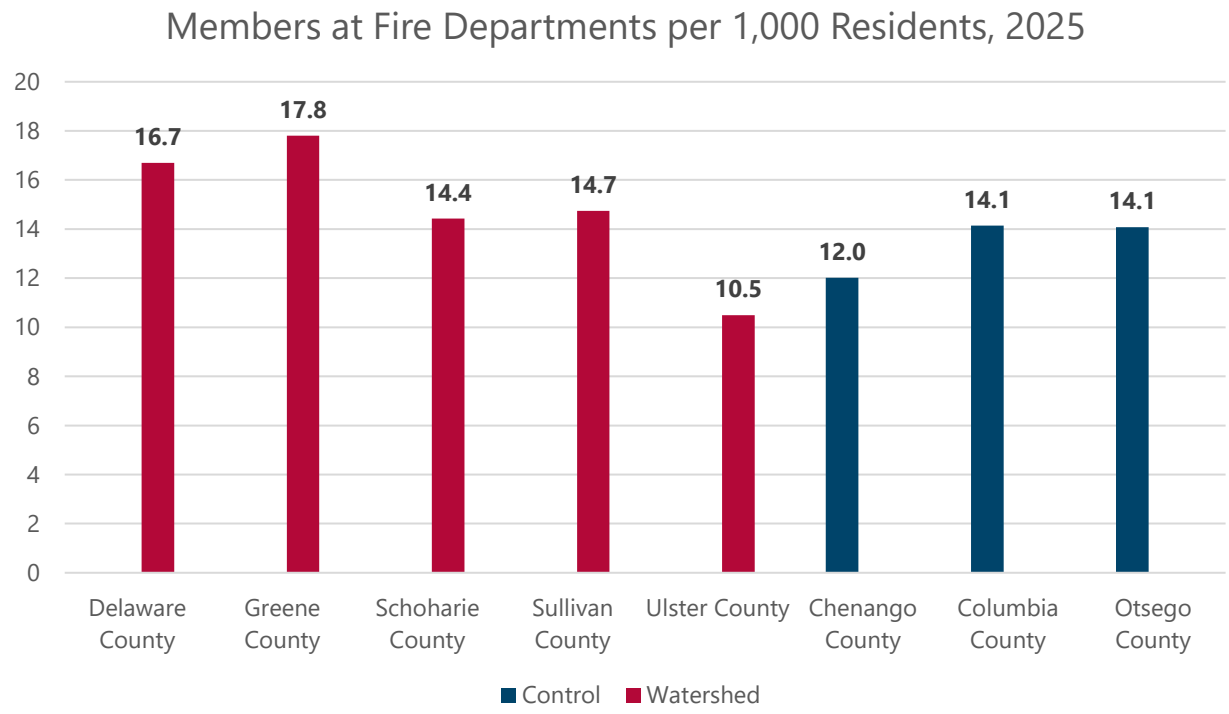
Violent Crime Rate



Source: Federal Bureau of Investigation, New York State Division of Criminal Justice Services

Overall, violent crime rate per 10,000 residents fell for both the Watershed and Control counties over the 14-year period, with the Watershed counties experiencing higher average rates throughout most of the years but converging more closely with the Control counties by 2024.

Numbers of Members at Fire Departments



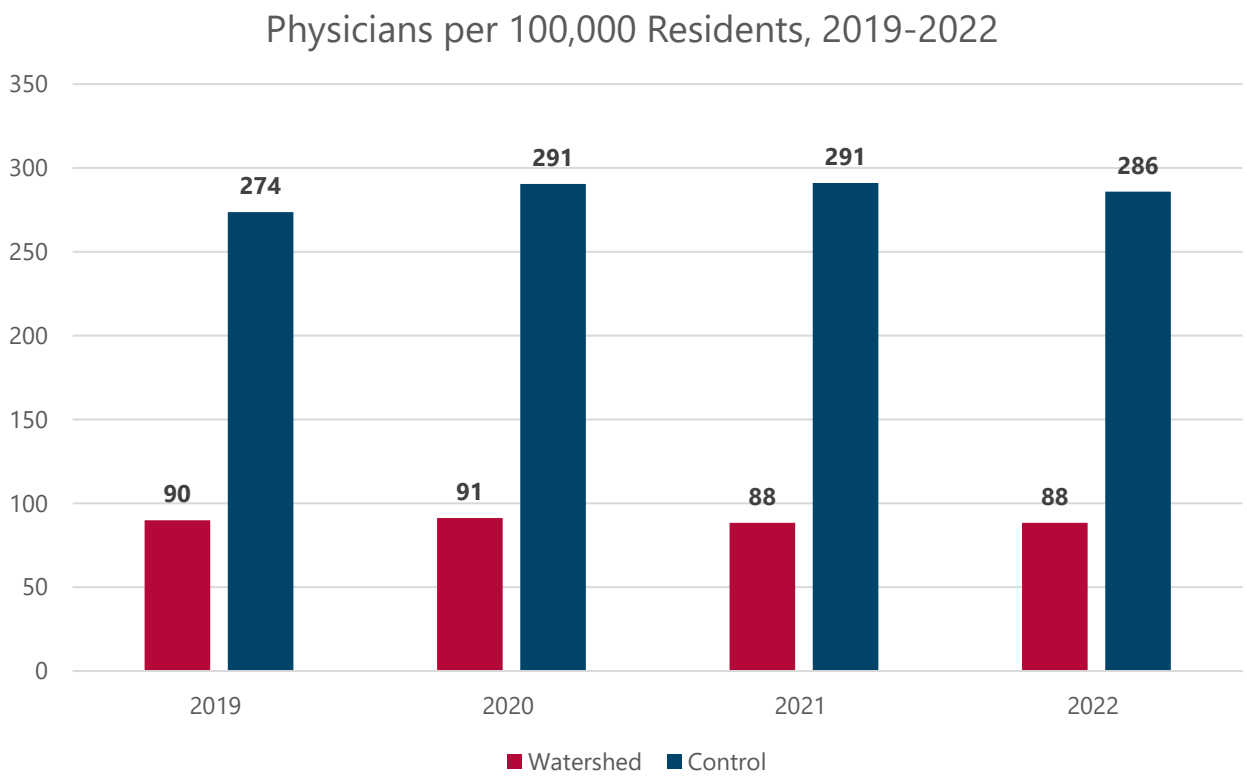
Source: New York State Division of Homeland Security and Emergency Services (DHSES), US Census Bureau[24]

Among the Watershed counties, Greene County had the highest rate with 17.8 firefighters per 1,000 residents, followed by Delaware County with 16.7. Schoharie and Sullivan counties were nearly equal, at 14.4 and 14.7 respectively, while Ulster County reported the lowest rate among the Watershed areas at 10.5. In contrast, the Control counties had slightly lower but more consistent figures, with Chenango at 12.0 and both Columbia and Otsego at 14.1.

[24] This metric used the number of members in fire departments in 2025 for each county and the 2024 population for each county to find the number of members per 1,000 residents in each county.

Overall, Watershed counties tended to have higher average firefighter-to-resident ratios, suggesting potentially greater staffing or stronger volunteer participation compared to the Control counties.

Physicians Per 100,000 residents



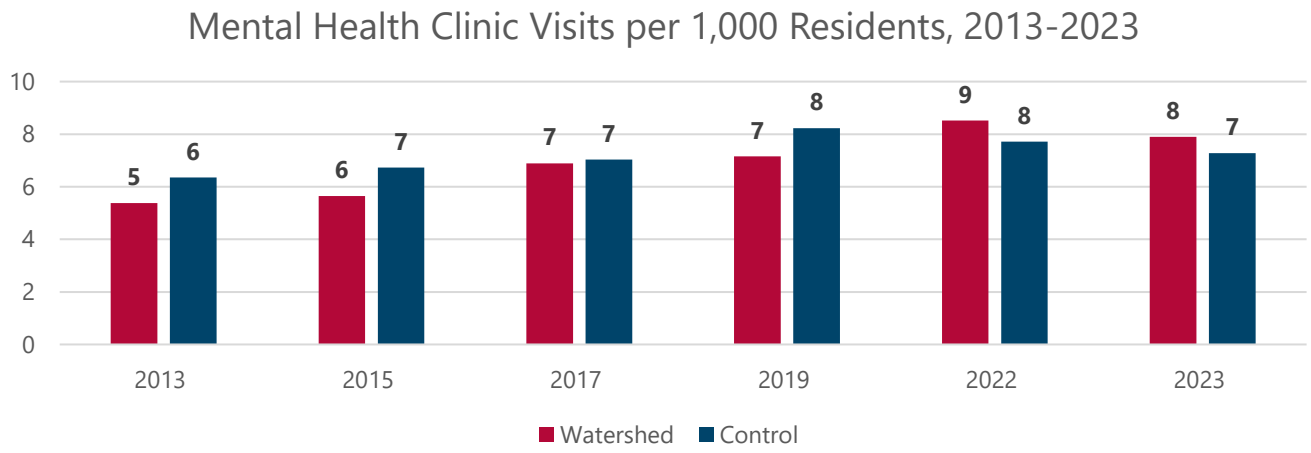
Source: US Health Resources and Services Administration

Overall, the data shows a persistent and significant disparity in healthcare provider availability, with the Control counties maintaining roughly three times as many active physicians as the Watershed counties.[25]

Throughout the four-year period, the Control counties consistently had a much higher average physician-to-resident ratio than the Watershed counties. The Control counties ranged from an average of 274 physicians per 100,000 residents in 2019 to a peak of 291 in both 2020 and 2021, before slightly decreasing to 286 in 2022. In contrast, the Watershed counties maintained a much lower and relatively stable average rate.

[25] A lack of home care resources was noted as another large issue in the Watershed counties through feedback on the draft of this report – this could be considered for future study.

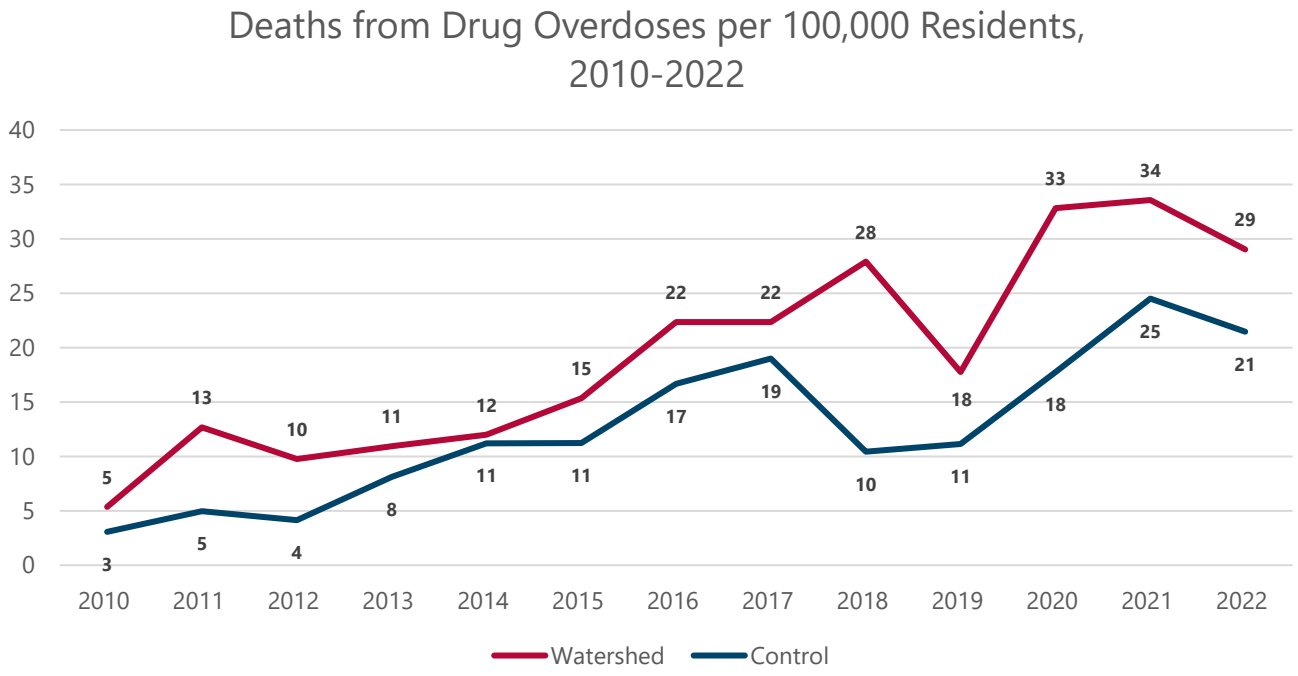
Mental Health Office Clinic Visits



Source: New York State Office of Mental Health

Both groups saw a gradual increase in visits over time, though the Control counties generally maintained slightly higher rates until recent years. In 2023, the Watershed counties surpassed the Control counties, recording 8 visits per 1,000 residents compared to 7 in Control counties.

Deaths from Drug Overdoses



Source: New York State Department of Health

Across the entire period, the Watershed counties consistently experienced higher average overdose death rates than the Control counties. Deaths in the Watershed counties rose sharply after 2014, peaking at an average of 34 deaths per 100,000 residents in 2021 before declining slightly to 29 in 2022. In contrast, the Control counties increased from 3 deaths per 100,000 in 2010 to 21 in 2022. The gap between Watershed and Control counties widened over time.

Social Vitality and Amenities – Arts and Culture[26]

Number of Libraries per 1,000 People

Libraries are a critical resource in communities - particularly rural communities like those in and around the Watershed – as they provide access to a wide range of information, educational enrichment and activities that promote social connection.

To gauge access to libraries, the CGR Consulting Team calculated the number of libraries (both Association and Public) per 1,000 residents in Watershed and Control counties and examined the distribution of libraries across each county.

County	# Libraries	Population/1,000 (Approx.)	# Libraries/1,000 People
Watershed			
Delaware	12	44	0.27
Greene	8	47	0.17
Schoharie	4	30	0.13
Sullivan	9	80	0.11

[26] This section originally had several metrics proposed for data collection that were changed or removed during the project as it became clear that data collection would be too challenging, data was not available, or a better metric/collection method presented itself. This subsection does not have key findings because there is only 1 metric evaluated. See **Appendix B** for the list of removed/changed metrics and rationale.

Ulster	22	182	0.12
Control			
Chenango	10	46	0.22
Columbia	11	61	0.18
Otsego	14	60	0.23

Source: NYS Library Public Library Service Area Maps https://www.nysl.nysed.gov/libdev/libs/service-area-maps (# libraries), 2023 Census (approx. Population)

Key Observations:

- Counties in the Watershed ranged from a low of 0.11 libraries per 1,000 residents (Sullivan County) to a high of 0.27 (Delaware County).
- Counties in the Control group ranged from a low of 0.18 libraries per 1,000 people to a high of 0.23 (Otsego County).
- 4 of the 5 Watershed counties had lower library access than the lowest Control county. However, the number of counties in the entire sample is small (8 total) and the differences are not large, so we do not find a meaningful difference.
- The distribution of libraries varied across the counties in both the Watershed and Control counties, more evenly distributed in some counties than others.

Environment and Natural Resources

Key Findings

- **Air Quality:** Overall, Watershed and Control counties' air quality has generally met federal and state standards over the past decade, but detailed and locally specific long-term trends have only recently become easier to track due to expanded community-based monitoring.
- **Water Quality:** There is no major difference in water quality between Watershed and Control counties and both have largely maintained high levels of quality. An increase of Safe Drinking Water Act (SDWA) violations with stable contaminant levels indicates compliance or procedural issues in Watershed counties rather than an outright water quality decline. This reflects no major differences with Control counties.
- **Quality of Conservation Area:**
  - Fragile soils are mainly concentrated in Delaware County (both inside and outside the Watershed), indicating that fragile soil conditions have less to do with being located

within the Watershed and more with local area slope conditions (i.e. steeper slopes = more fragile soils). 43.5% of all soils in the Watershed are rated as either fragile or moderately fragile. By comparison, 33.5% of soils in Control counties are classified as fragile or moderately fragile.

- In the Watershed, 79.5% of ground cover is either deciduous forest (61.5%), evergreen forest (3.5%) or mixed forest (14.5%). The high amount of forested ground cover indicates a very high quality of conservation areas in the Watershed. In Control counties, 66.5% of ground cover is classified as deciduous, evergreen, or mixed forest, a notably lower percentage than the Watershed.
- Between 2012 and 2024, the amount of mapped wetland acreage in the Watershed counties increased more than in Control counties, increasing by 66,487 acres and 34,472 acres, respectively. These increases are likely attributed to changes in wetland mapping completed by the New York State Department of Environmental Conservation rather than on-the-ground wetland expansion.
- There is a limited presence of invasive species in the Watershed. Invasive species may be more present outside the Watershed in the Control counties primarily due to the comprehensive and proactive management strategies employed within the Watershed to prevent, detect, and control invasive species.[27]

- Climate impacts:
  - **Federal disaster aid relief:** Watershed location dramatically increases disaster severity (larger amount of relief money provided). Despite having a similar frequency of disaster declarations (average of 5.3 vs. 5.0), Watershed counties received 15.6 times more per capita assistance on average than comparable Control counties ($3,093 vs. $198). Two factors likely contribute to this disparity: (1) Physical terrain: The Watershed's mountainous topography—with steep slopes causing rapid runoff and narrow valleys concentrating flood damage—may result in more severe disaster impacts when events occur, qualifying communities for higher levels of federal assistance; and (2) Enhanced application capacity: NYC/DEP funding and technical support may enable Watershed municipalities to more effectively document damages, prepare comprehensive grant applications, and navigate complex federal disaster assistance programs, resulting in higher recovery of available federal funds compared to Control counties with less institutional support. Further research would be needed to quantify the relative contribution of each factor, but both likely play a role in the observed assistance differential.
  - **A county's proportion of land in the Watershed does not predict assistance levels.** There is no monotonic relationship between the percentage of a county's land in the

[27] Our analysis is limited to open-source data. Any detailed assessment—particularly regarding invasive species—would require on-the-ground field surveys to verify presence and extent. The Watershed has been (and still is subject) to more environmental regulation than the areas outside of it. A couple of additional sources supporting this claim are listed here: https://www.caryinstitute.org/science/research-projects/research-guide-catskills-region-new-york, https://www.nyc.gov/assets/dep/downloads/pdf/about/filtration-avoidance-determination/fad_4.8_invasive_species_strategy_03-22.pdf

Watershed and the level of assistance received (e.g., Delaware – which has the most land mass in the Watershed boundary, 53% – received $627/capita, while Schoharie – which has significantly less land mass in the Watershed boundary, 9% -- received $3,068/capita). However, counties with any amount of land in the Watershed appear to have greater disaster severity than Control counties.

Air Quality

The Watershed's rural profile means fewer major sources of air pollution compared to more urban, downstate areas. However, seasonal woodsmoke and transportation emissions can locally impact air quality short-term. Overall, the Watershed counties' air quality has generally met federal and state standards over the past decade, but detailed and locally specific long-term trends have only recently become easier to track due to expanded community-based monitoring. This data is not yet widely (or publicly) available.

Similarly, air quality in Control counties has been mostly acceptable with occasional periods of concern. For example, Chenango County experienced some hazardous air quality alerts related to high PM2.5 levels caused by events like wildfires (summer 2023)[28]. Overall, ambient air quality monitoring data for the broader Central New York region, which includes the Control counties – shows that annual average concentrations of key pollutants like PM2.5 have remained below thresholds set by health standards.

Drinking Water Quality

Over the past decade, the drinking water quality in the Watershed counties[29] has generally been high and safe for consumption, as it is a major source of water for New York City and subject to rigorous testing and monitoring. However, there have been concerns about specific contaminants, particularly trihalomethanes (TTHMs) and haloacetic acids (HAAs), which can exceed health guideline levels.

The Drinking Water Noncompliance Index in the U.S. Census's EJScreen data measures the track record of violations by community water systems (CWSs) under the Safe Drinking Water Act (SDWA), focusing on both the severity and duration of those violations[30]. The Drinking Water Noncompliance Index is a weighted score based on the number of SDWA violations that have not been returned to compliance over the past five years. In this data, higher scores and percentiles mean worse noncompliance (i.e., these communities have longer-lasting, more severe, or more numerous SDWA violations that have not been returned to compliance).

[28] Information from this section can be found in NYSDEC's Ambient Air Quality Report, 2023, NYSDEC's Air Quality Index (AQI) Forecast and Current Observations for NYS, and AirNow.gov.
[29] As described in the section on communities served by community water systems, the Watershed towns had 19 community water systems (out of 41 towns) while the Control towns had 9 (out of 11 towns).
[30] EJScreen data is based on U.S. Census American Community Survey (ACS) 5-Year Estimates ejscreen_fact_sheet.pdf

The closer an index score is to 100 (i.e., the higher the score), the more and longer-sustained the SDWA violations in a particular place.

In both the Drinking Water Noncompliance EJ Index and the Percentile for Drinking Water Noncompliance, Watershed counties scored higher in 2024 than the Control counties.

Drinking Water Noncompliance EJ Index (2024)	
Watershed	23.24
Control	19.02
Percentile for Drinking Water Noncompliance (2024)	
Watershed	21.39
Control	20.15

Source: US Census, 2024

The New York State Department of Health (DOH) also requires counties to submit annual drinking water reports. This differs from EJScreen data in that, instead of measuring SDWA violations, it is comprised of actual monitoring data collected by water suppliers and analyzed under NYSDOH protocols. Annual drinking water quality reports provide detailed contaminant concentrations, presence/absence of contaminants, trends, and health risk explanations for each contaminant tested. The reports do not systematically integrate demographic data or produce cumulative environmental justice indexes.

Importantly, the detection of contaminants does not equate to danger for consumers. Results are compared to federal and state standards (MCLs-maximum contaminant levels), and only exceedances of these standards generally indicate risk. Each contaminant has a different MCL and a different unit of measurement.

The health safety standard for each contaminant detected in Watershed and Control counties is described in the table below.

Contaminant	Health Safety Standard (MCL)
1,4-Dioxane	1 ug/L
Arsenic	10 ug/L
Combined Radium 226 & 228	5 Pci/L
Di (2-Ethylhexyl) Phthalate	6 ug/L
Haloacetic Acids (HAA5)	60 ug/L

Nitrate	10 mg/L
Perfluorooctane Sulfonic Acid (PFOS)	10 ng/L
Perfluorooctanoic Acid (PFOA)	10 ng/L
Tetrachloroethylene	5 ug/L
Trichloroethylene (TCE)	5 ug/L
Trihalomethanes (TTHM)	80 ug/L
Uranium	30 ug/L

Source: *NYS Department of Health Annual Drinking Water Quality Report, https://www.health.ny.gov/environmental/water/drinking/annual_water_quality_report/docs/table1.pdf*

According to data from the NYS DOH, in both 2013 and 2023, Watershed and Control counties detected no unsafe levels of contaminants in drinking water sources.

In the Watershed counties, levels of Combined Radium 226 & 228 and TCE increased slightly between 2013 and 2023, though still below MCL. Although there is no immediate health risk, increasing trends can signal the need for closer attention and early intervention, since both contaminants are known to pose significant health risks if their levels cross safety thresholds or contribute to cumulative exposures. In Control counties, the only contaminant that was recorded at higher levels in 2023 than 2013 was nitrate, but it was still below safety thresholds.

Both Watershed and Control counties show improvement in levels of contaminants like arsenic, TTHM, and HAA5. Notably, no uranium was detected in Watershed counties in 2023, a marked improvement from a decade prior.

Mean Level by Contaminant Type	2013		2023	
Contaminant	Watershed	Control	Watershed	Control
1,4-Dioxane (ug/L)	NA	NA	0.36	0.38
Arsenic (ug/L)	4.33	6.20	2.89	2.39
Combined Radium 226 & 228 (Pci/L)	0.75	1.27	0.94	1.10
Di (2-Ethylhexyl) Phthalate (ug/L)	2.02	NA	0.7	NA
Haloacetic Acids (HAA5) (ug/L)	18.19	16.60	15.66	9.26
Nitrate (mg/l)	0.69	1.02	0.60	1.38

Perfluorooctane Sulfonic Acid (PFOS) (ng/L)	NA	NA	3.16	3.18
Perfluorooctanoic Acid (PFOA) (ng/L)	NA	NA	2.26	1.45
Tetrachloroethylene (ug/L)	NA	0.50	NA	NA
Trichloroethylene (TCE) (ug/L)	NA	0.50	1.38	NA
Trihalomethanes (TTHM) (ug/L)	28.68	23.37	20.94	12.26
Uranium (ug/L)	3.21	NA	NA	NA

Taken together, the EJScreen data and annual drinking water quality reports suggest that the SDWA violations in the Watershed counties were not solely about contaminant level exceedances. Instead, these violations could stem from other aspects of regulatory compliance, such as:

- **Monitoring and reporting failures**: Water systems may have failed to conduct required water quality tests on schedule or failed to report monitoring data to regulatory agencies in a timely or complete fashion. These violations do not necessarily mean the contaminant levels have worsened, but that the procedures to ensure safety are not being properly followed.
- **Treatment technique violations:** Water systems may have violated required treatment or operational processes designed to reduce contaminants, even if measured contaminant levels remain below MCLs.
- **Public notice violations:** Systems could have failed to provide public notifications as required when problems or violations occur.
- **Administrative or other regulatory violations:** Other non-health-based rule violations, such as failing to deliver required consumer confidence reports.

Increased SDWA violations with stable contaminant levels indicate compliance or procedural issues in Watershed counties rather than an outright water quality decline. The system may be at higher risk if monitoring lapses or treatment failures allow conditions to worsen unnoticed, but the contaminant concentrations themselves have not yet escalated materially.

Quality of Conservation Areas

Analyzing the quality of conservation areas reveals how well these lands support both environmental and socioeconomic health. Conservation area quality encompasses factors like ecological integrity, recreational access, habitat resilience, and the capacity to buffer communities against hazards such as flooding and drought. High-quality conservation areas provide public recreation, contribute to tourism, and raise property values, all of which directly impact rural economic opportunity and community well-being.

Additionally, in the case of communities in the Watershed, conservation area quality also has an impact on the water supply for millions of people; healthy, well-managed ecosystems

ensure natural water filtration, sustain wildlife, and maintain forest health, which are core to both public health and long-term community vitality.

For this analysis, the quality of conservation areas was determined by measuring the following:

Conservation land protections: The entire Watershed area falls within a conservation area with stricter development and land use regulations. This makes the comparison between Watershed and Control areas inherently unequal, with a bias toward higher quality conservation areas within the Watershed. See the U.S. Fish and Wildlife Service for more information on Conservation Areas.

Ground cover – To determine land use, particularly forested versus agricultural versus developed land, since forested land provides better ecological protection and water quality buffering. Data retrieved from the National Land Cover Database (U.S. Geological Survey).

Soil characteristics – Including erosion potential and soil types (both included in soil fragility index measures) influencing sediment transport into water bodies. Data retrieved from the U.S. Department of Agriculture's Natural Resources Conservation Service Gridded Soil Survey Geographic Database.

Mapped wetlands and wetland buffers – Mapped wetlands and their buffer areas tend to indicate improved quality of conservation areas by reducing sediment and pollutant runoff. Data retrieved from NYS Environmental Resource Mapper.[31]

Presence of invasive species: This indicates ecosystem health, influencing species diversity and habitat fragmentation. Data retrieved from iNaturalist Observational Data.

Natural Heritage Communities: A measure of biodiversity in New York State that indicates specific habitats or ecosystems that are recognized for their rarity, ecological significance, or high-quality natural features. These communities include various types of wetlands, forests, grasslands, ponds, streams, and other habitats that support diverse plant and animal species. The New York Natural Heritage Program documents these areas based on criteria such as rarity in the state, size, condition, and landscape context, aiming to conserve and protect these valuable ecological areas. Data retrieved from the NYS GIS Clearinghouse.

Maps (one for ground cover and one for soil characteristics and invasive species) for both the Watershed and Control counties are provided at the end of this section.

[31] Not all wetlands are functionally equivalent; types—e.g., bogs and fens, emergent marsh, forested, and scrub–shrub systems—provide different ecosystem services and impose varying constraints/opportunities for access, infrastructure, and development. Accordingly, total wetland acreage is an imperfect proxy for community vitality; site-specific wetland type, condition, and regulatory status should guide interpretation.

Ground Cover (2024)

Within the Watershed, 79.5% of ground cover was either deciduous forest (61.5%), evergreen forest (3.5%) or mixed forest (14.5%). The high amount of forested ground cover indicates a very high quality of conservation areas in the Watershed. Forested ground cover is an indicator of high-quality conservation areas because they act as natural filters that trap pollutants, sediments, and nutrients before they reach water bodies, significantly reducing contamination and improving water quality. The root systems in forests also stabilize soil and prevent erosion, thereby limiting sediment runoff into streams and rivers. This preserves aquatic habitats and reduces turbidity that can harm fish and other species.

Compounding this indicator of high-quality conservation areas in the Watershed is the fact that only about 7% of ground cover in the Watershed is classified as developed, either as open space, low intensity, medium intensity, or high intensity. Another 11% of ground cover is pasture or hay and less than 1% is cultivated crops. These types of ground cover tend to be indicators of poor conservation area quality, but, by comparison to the amount of forested land in the area, this developed and agricultural ground cover likely does not outweigh strong conservation quality influences.

In Control counties, 66.5% of ground cover is classified as deciduous, evergreen, or mixed forest, a notably lower percentage than the Watershed. About 9.5% of land is developed as open space, high-intensity, medium-intensity, or low-intensity, all higher percentages than within the Watershed. Additionally, 17.5% of ground in Control counties is used for pasture/hay or cultivated crops, again, a higher percentage than in the Watershed.

These data points indicate that conservation areas within the Watershed are of higher quality than in Control counties.

Soil Fragility (data from 2024)

Fragile soils in wetlands often correlate with degraded habitat quality, reduced plant diversity, and loss of microbe populations that sustain nutrient cycling and water purification functions. Additionally, conservation areas with fragile soils are less resilient to environmental stresses like climate change or human disturbance, heightening the risk of lasting damage and loss of vital wetland services.

In the Watershed, only 5% of soils are characterized as fragile. Most of these fragile soils are located in low-lying areas near streams and tributaries. Key characteristics of fragile soil are that they are easily degraded and prone to erosion, have weak structures and low aggregate stability, shallow rooting depth or presence of restrictive layers, sparse vegetation cover and are located on slopes. These soils require careful management and conservation efforts to prevent worsening degradation, and to maintain ecosystem functions.

In Control counties, only 2% of soil is classified as fragile. Fragile soils are mainly concentrated in Delaware County (both inside and outside the Watershed), indicating that fragile soil conditions have less to do with being located within the Watershed and more with local area slope conditions (i.e. steeper slopes = more fragile soils).

In the Watershed, 38.5% of soils are classified as moderately fragile. These soils typically have moderate soil structure and aggregate stability, intermediate resistance to erosion and compaction, and moderate organic matter content and nutrient availability. These soils can support sustainable land uses if managed well, but they remain at risk of degradation if protective practices are not followed. About 31.5% of soil in Control counties is classified as moderately fragile, a lower level than in the Watershed counties.

Another 19.5% of soils in the Watershed are classified as slightly fragile. Slightly fragile soils typically have good to moderate soil structure and aggregate stability, low to moderate susceptibility to erosion and compaction, higher organic matter levels to support soil fertility, and are more resilient and quicker to recover from disturbances. These soils are more adaptable to a variety of land uses with proper management and maintenance. These areas in the Watershed are clustered in areas with less steep slopes. Comparatively, approximately 30.5% of soils in Control counties are characterized as slightly fragile, a higher share than in the Watershed.

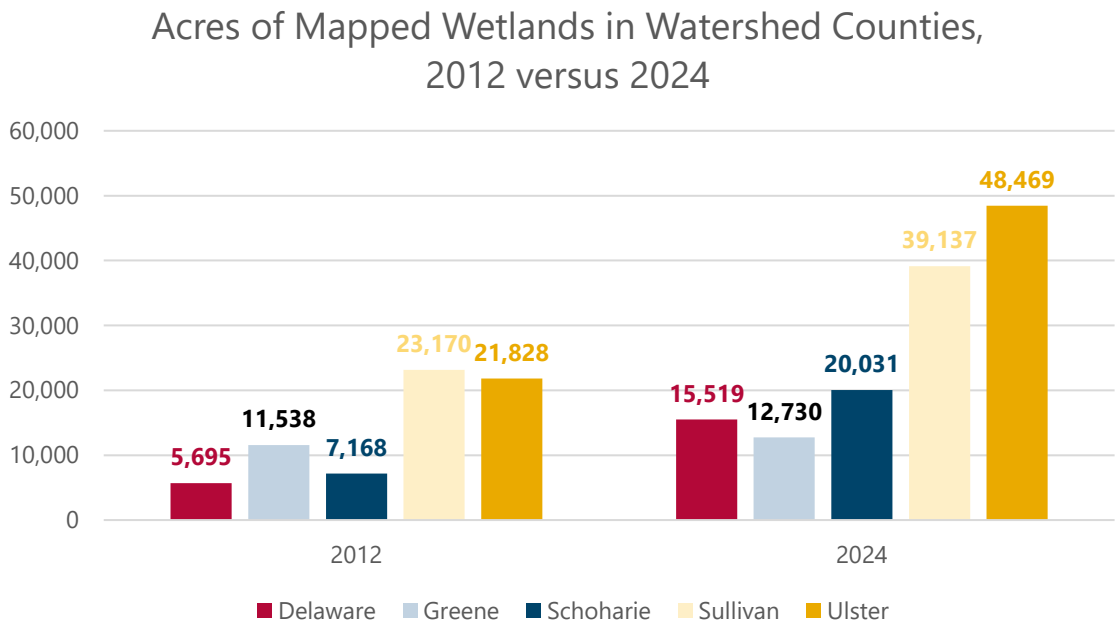
Wetlands (2012-2024)

Between 2012 and 2024, NYS DEC's jurisdiction over freshwater wetlands was greatly expanded to include approximately one million additional acres of previously unregulated wetlands across the state. This expansion was partly due to an amendment to the Freshwater Wetlands Act in 2022 that responded to concerns that many smaller or unmapped wetlands that provide critical ecosystem services were unprotected. The original wetland mapping system tied jurisdiction almost entirely to whether a wetland appeared on official NYS Wetland Maps and generally required it to be at least 12.4 acres. These older maps now serve in a purely advisory capacity and DEC determines whether a parcel contains a regulated wetland.

The information presented below is likely impacted/influenced by this change. Expanding the definition of what was considered a state designated wetland (outside of informational mapping) may have inflated the total number and acreage of mapped wetlands in the Watershed and Control counties (in comparison to what the older maps used to show).

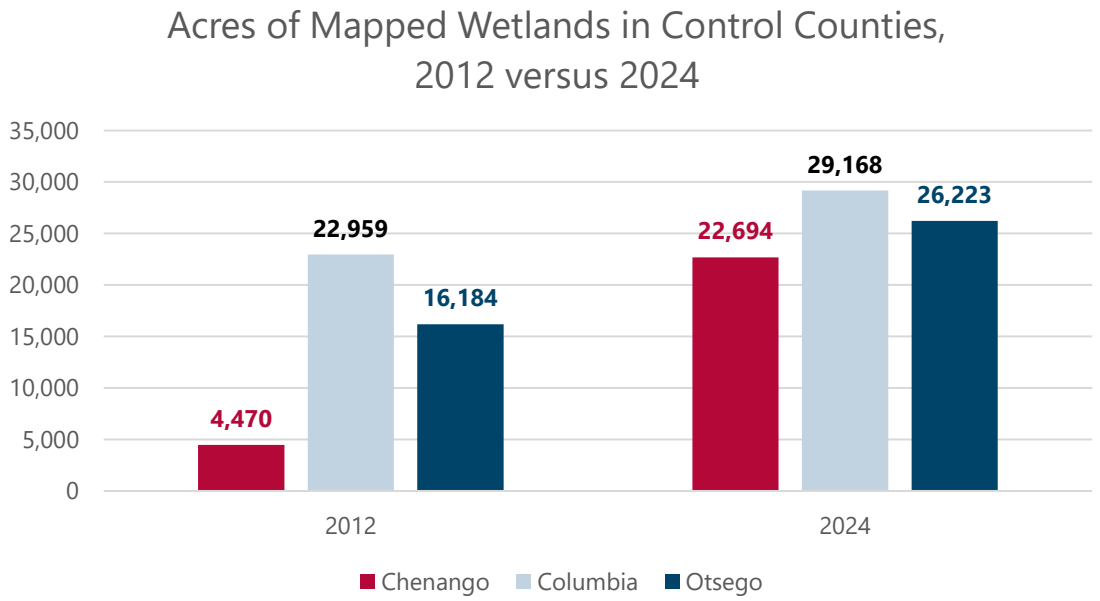
Watershed and Control Counties

In 2012, Watershed counties contained a combined 69,399 acres of mapped wetlands (state and federally designated). Sullivan County had the most mapped wetlands at 23,170 acres, followed by Ulster County with 21,828 acres. In 2024, there were a total of 135,886 acres of mapped wetlands in Watershed counties. The increase in mapped wetland acres in Watershed counties could be due to significant regulatory changes implemented by the New York State Department of Environmental Conservation (DEC).

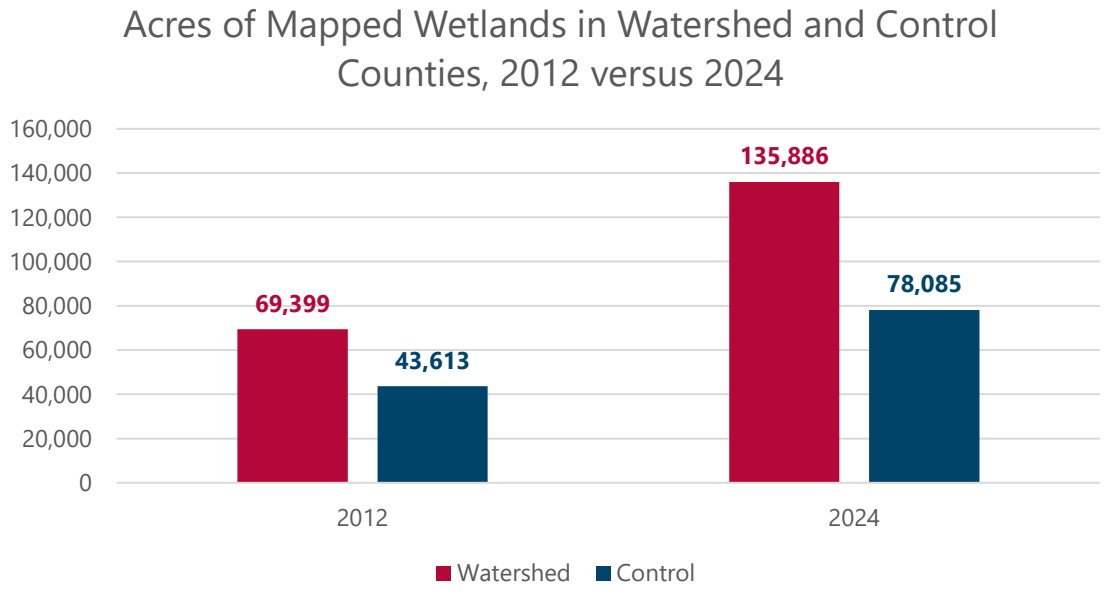


Source: NYS Department of Environmental Conservation Freshwater Wetland Database

In 2012, Control counties contained approximately 43,613 acres of mapped wetlands. Columbia had the highest acreage of mapped wetlands at 22,959 acres. In 2024, Control counties had a total of 78,085 acres of mapped wetlands with Columbia County again showing the greatest number. Chenango County had the highest increase of mapped wetland acreage, increasing by 18,494 acres of mapped wetlands between 2012 and 2024. Like in Watershed counties, the updated NYS DEC freshwater wetland regulations may have caused the mapped wetland acreage in Control counties to increase.

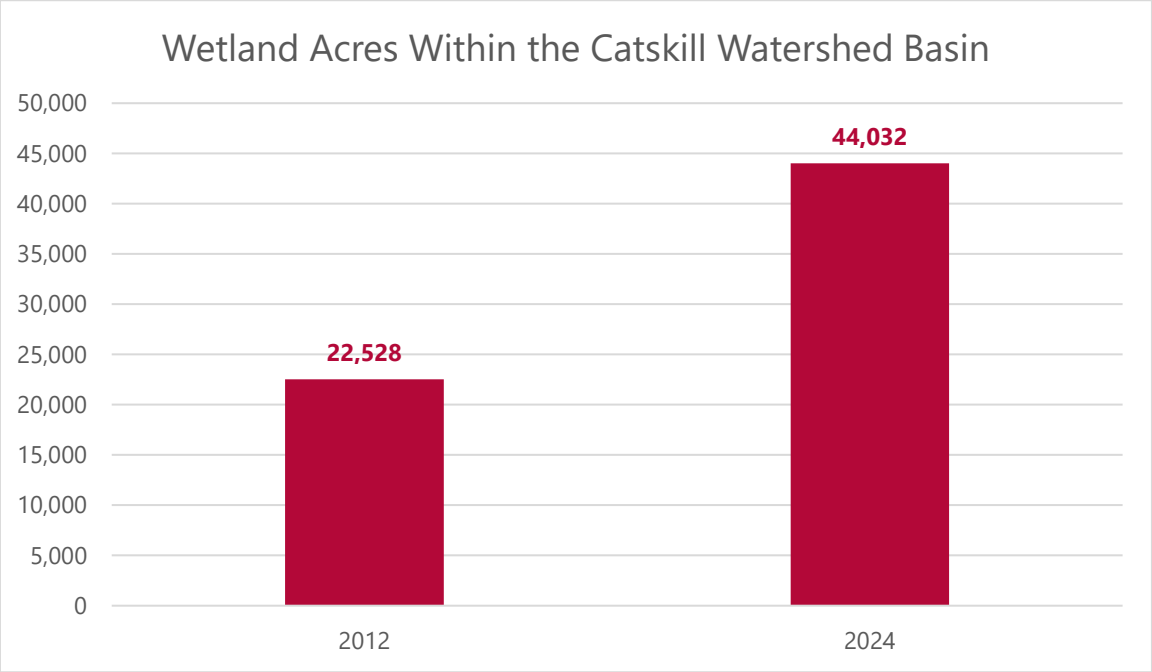


Source: NYS Department of Environmental Conservation Freshwater Wetland Database



Source: NYS Department of Environmental Conservation Freshwater Wetland Database

Wetlands in the Watershed (Wetlands in the NYCDEP Regulatory Boundary)



Source: NYS Department of Environmental Conservation Freshwater Wetland Database

In 2012, there were about 22,528 acres of mapped wetlands in the Watershed (about 2.2% of the Watershed's total land area). In 2024, this number increased to approximately 44,032 acres of mapped wetlands or 4.3% of the total land area.

Invasive Species (2006-2025)

Invasive species crowd out native species, leading to simplified ecosystems with fewer native plants and animals, weakening ecosystem resilience. Their presence also often reflects increased human-caused disturbance, habitat fragmentation, or changes in water quality that favor invasive species. Invasive plants and species can alter nutrient cycling, increase sediment runoff, and destabilize stream banks, leading to degraded aquatic habitats and poorer water quality. Given the large timeframe of this data, if the presence of an invasive species was recorded in a particular year, the data point remains until the presence of the invasive species is no longer detected.[32]

Data on invasive species can be found on the Quality of Conservation Lands maps at the end of this section.

[32] Invasive species data collection for this analysis was limited to available open-source data. A detailed assessment of invasive species would require on-the-ground field surveys to verify the presence and extent of invasives.

In the Watershed (inside of the NYCDEP regulatory boundary), there appeared to be a limited presence of invasive species. They were limited mostly to small parts of Delaware, Ulster, and Green Counties. These species included Hemlock Wolly Adelgid, Northern Snakehead, Jumping Worms, Eurasian Watermilfoil, and Japanese Barberry. These species affect tree health, compete with native fish species, damage forest soil, clog waterways, and decrease biodiversity, thereby reducing the quality of conservation areas.

Control counties recorded higher numbers of invasive species than inside the Watershed, particularly in the terrestrial plants and insects, and invasive fish species categories. Invasive species may be more present outside the Watershed primarily due to the comprehensive and proactive management strategies employed within the Watershed to prevent, detect, and control invasive species. These include DEP controls to prevent invasive species introduction, including regulations requiring steam cleaning of boats before entering reservoirs, careful equipment cleaning protocols for construction and maintenance projects, and outreach to reduce human-mediated spread. The Watershed is also subject to early detection and rapid response (EDRR) for invasive species and targeted invasive species control projects with groups like the Catskill Regional Invasive Species Partnership (CRISP).

Natural Heritage Areas

Natural Heritage Areas are mostly contained within the Watershed boundaries, concentrated in Ulster and Greene counties[33]. The following table outlines the Natural Heritage Areas located in Watershed counties and shows the proportion of land in Natural Heritage Areas in these counties that falls within the Watershed. Overall, the Watershed contains approximately 63% of the Natural Heritage Areas in Delaware, Greene, Schoharie, Sullivan, and Ulster Counties.

Natural Heritage Area	Location	County	Total acres	Acreage within Watershed
Beech-Maple Mesic Forest	Slide Mountain	Ulster	72,168	72,168
	Beaverkill Drainage Basin	Sullivan	34,552	11,057
	Westkill Mountain	Greene	38,142	38,142
	Plateau Mountain	Greene	27,504	19,803
	Blackhead Mountain	Greene	15,874	9,842

[33] The higher presence of Natural Heritage Areas in the Watershed is likely correlated with the high presence of DEC lands. DEC lands are more likely to have been surveyed by Natural Heritage and therefore contain more Heritage communities.

	Little Spring Brook	Delaware	6,895	345
	South Hollow		100	100
Hemlock-Northern Hardwood Forest	Slide Mountain	Ulster	8,749	8,749
	Balsam Swamp	Ulster	4,579	687
	Plateau Mountain	Greene	3,751	2,813
	Blackhead Mountain	Greene	17,352	4,685
Mountain Spruce-Fir Forest	Hunter Mountain	Greene	2,048	2,048
Spruce-Fir Swamp	Brandy Brook	Ulster	653	0
Mountain Fir Forest	North Dome Mountain	Greene	214	214
Pitch Pine-Oak-Heath Rocky Summit	Shawangunk Mountains	Ulster	5,321	0
	Vernooy Kill Forest	Ulster	5	0
	High Point and Little High Point	Ulster	15	15
	Tice Ten Eyck	Ulster	140	140
	Tonshi Mountains	Ulster	65	65
	Toren Hoek	Ulster	50	50
Chestnut Oak Forest	Shawangunk Mountains	Ulster	31,897	0
	Vernooy Kill Forest	Ulster	832	0
	Long Eddy	Delaware	130	0
	Plateau Mountain	Greene	1,460	1,460

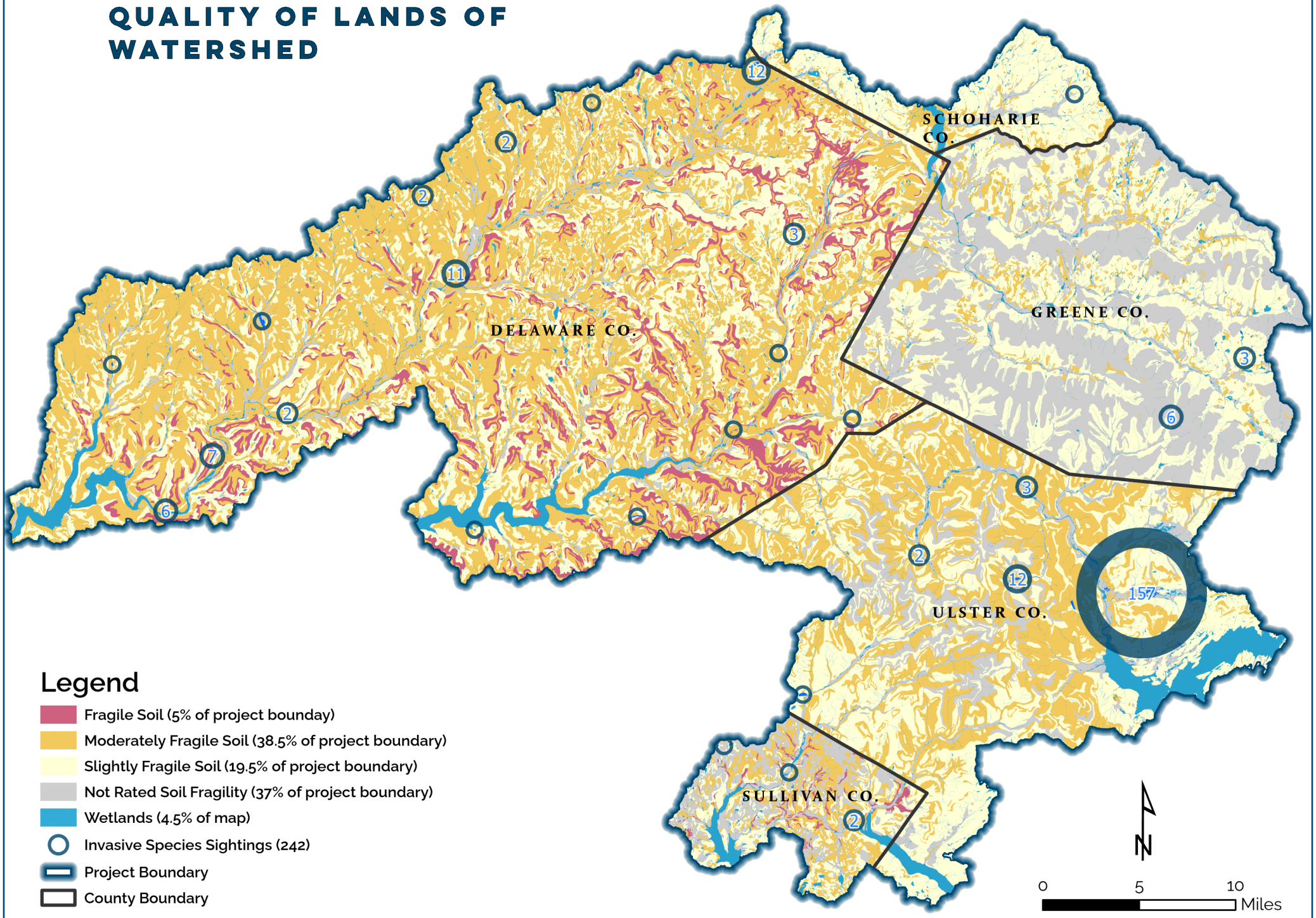
Highbush Blueberry Bog Thicket	Neversink Bear Swamp	Sullivan	47	0
Hemlock-Hardwood Swamp	Neversink Ash Swamp	Sullivan	40	0
	Vly Swamp	Ulster	155	0
	Tamarack Swamp Delaware	Delaware	14	0
Red Maple-Tamarack Peat Swamp	Vly Swamp	Ulster	115	0
Shrub Swamp	Lake Superior	Sullivan	20	0
Dwarf Shrub Bog	Lake Superior	Sullivan	17	0
Appalachian Oak-Pine Forest	Catskill Escarpment	Greene	488	0
Appalachian Oak-Hickory Forest	Potic Mountain	Greene	634	0
	Minisink Battleground Park Site	Sullivan	96	0
Shale Talus Slope Woodland	Potic Mountain	Greene	146	0
Floodplain Forest	Catskill Creek Austin Glen	Ulster	85	0
	Beaver Brook Highland	Ulster	5	0
Calcareous Shoreline Outcrop	Catskill Creek Austin Glen	Ulster	4	0
Freshwater Tidal Swamp	Catskill Marsh	Ulster	400	0
Black Spruce-Tamarack Bog	Tamarack Swamp Delaware	Delaware	50	0
Total			**274,812**	**172,383 (62.7%)**

Source: Natural Heritage Important Areas NYNHP

For Control counties, Columbia contains Natural Heritage Areas. These are mostly areas of cold water stream habitats, terrestrial areas, areas of bat foraging, and other aquatic areas. Chenango and Otsego counties do not have any.

Although there are more Natural Heritage Areas in the Watershed counties, the quality of conservation in these areas likely has more to do with geographic location than Watershed control and regulation practices (i.e. being located in the Watershed basin makes it more likely that that area will have Natural Heritage Areas).

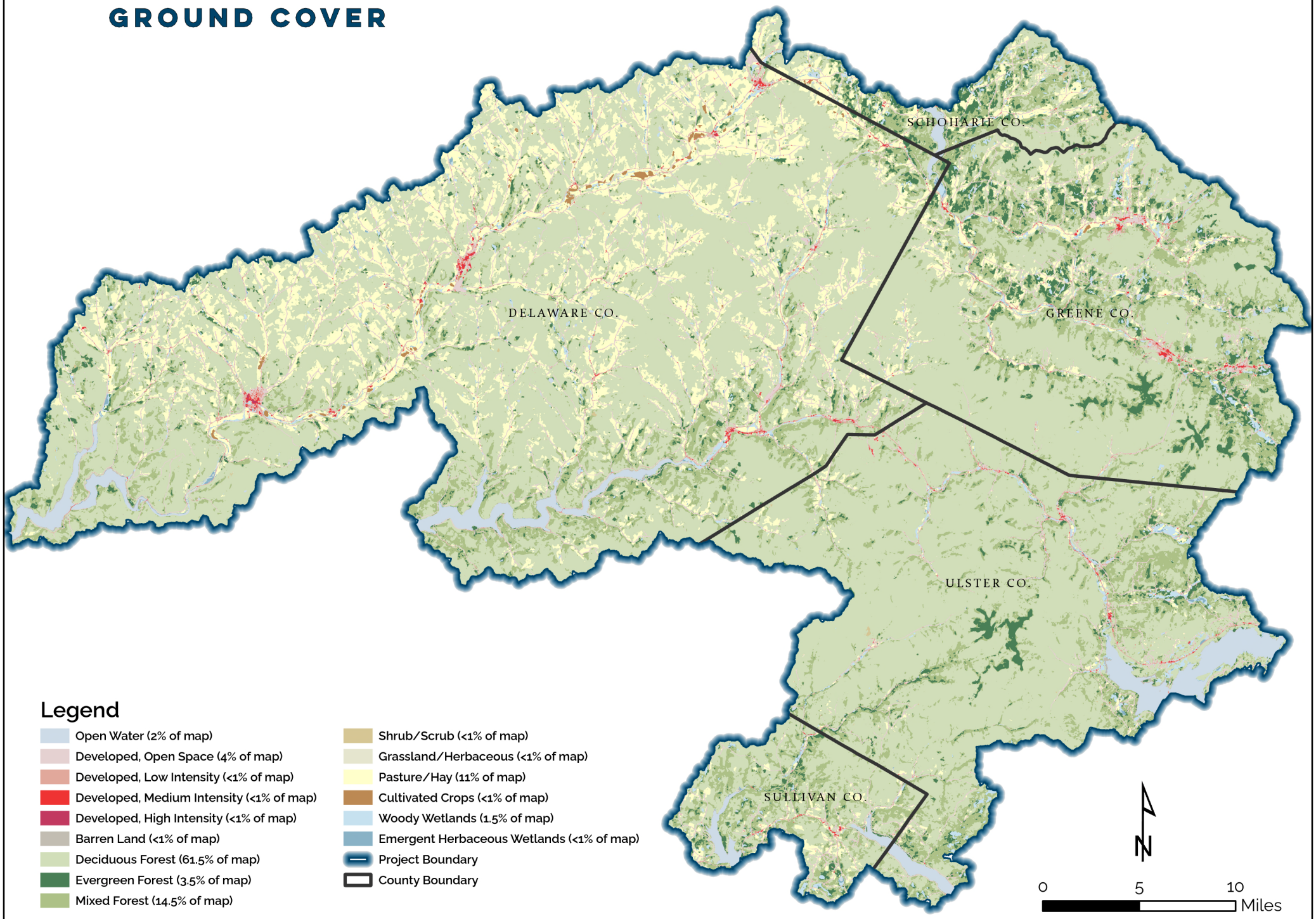
QUALITY OF LANDS OF WATERSHED



Legend

- Fragile Soil (5% of project bounday)
- Moderately Fragile Soil (38.5% of project boundary)
- Slightly Fragile Soil (19.5% of project boundary)
- Not Rated Soil Fragility (37% of project boundary)
- Wetlands (4.5% of map)
- Invasive Species Sightings (242)
- Project Boundary
- County Boundary

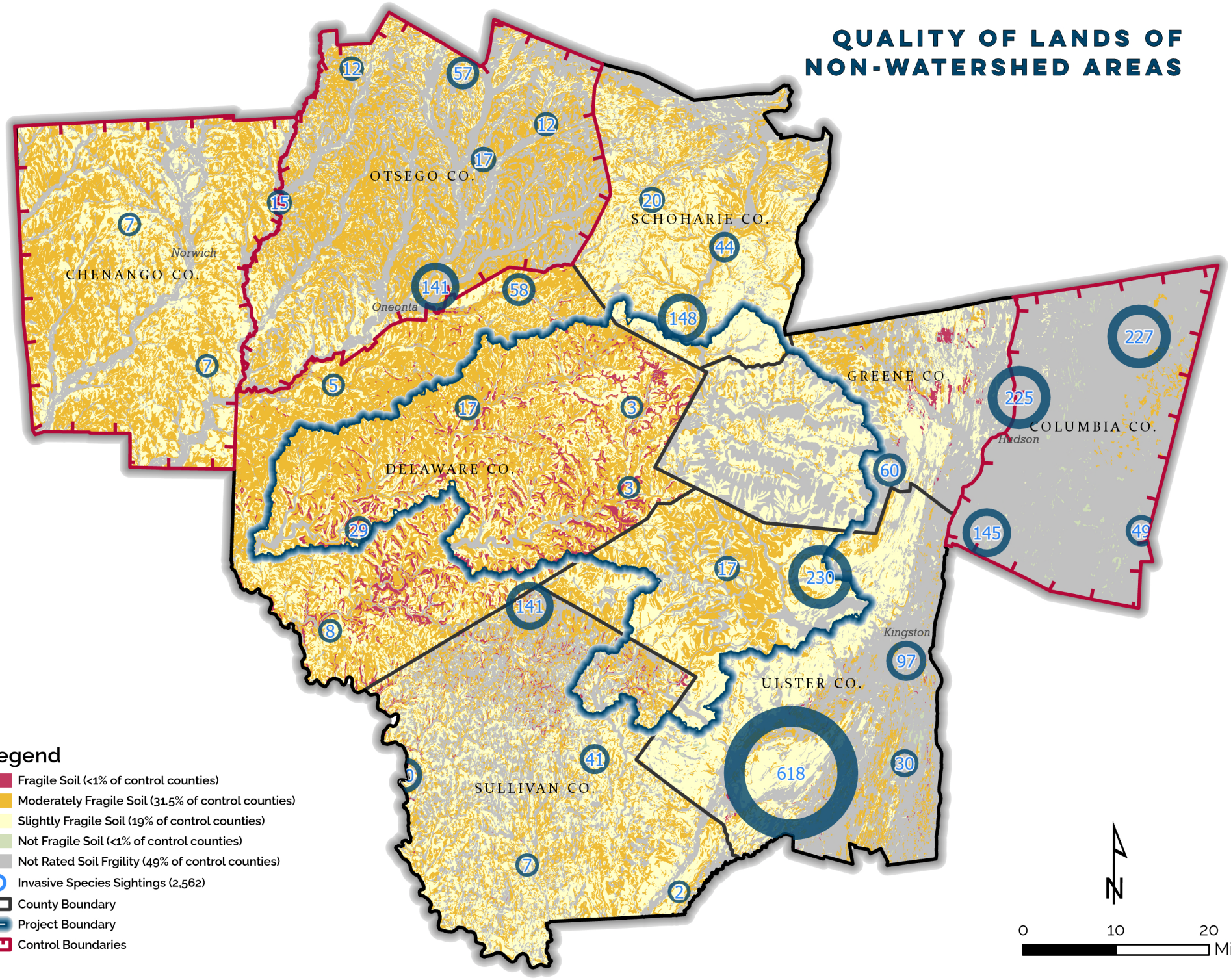
GROUND COVER



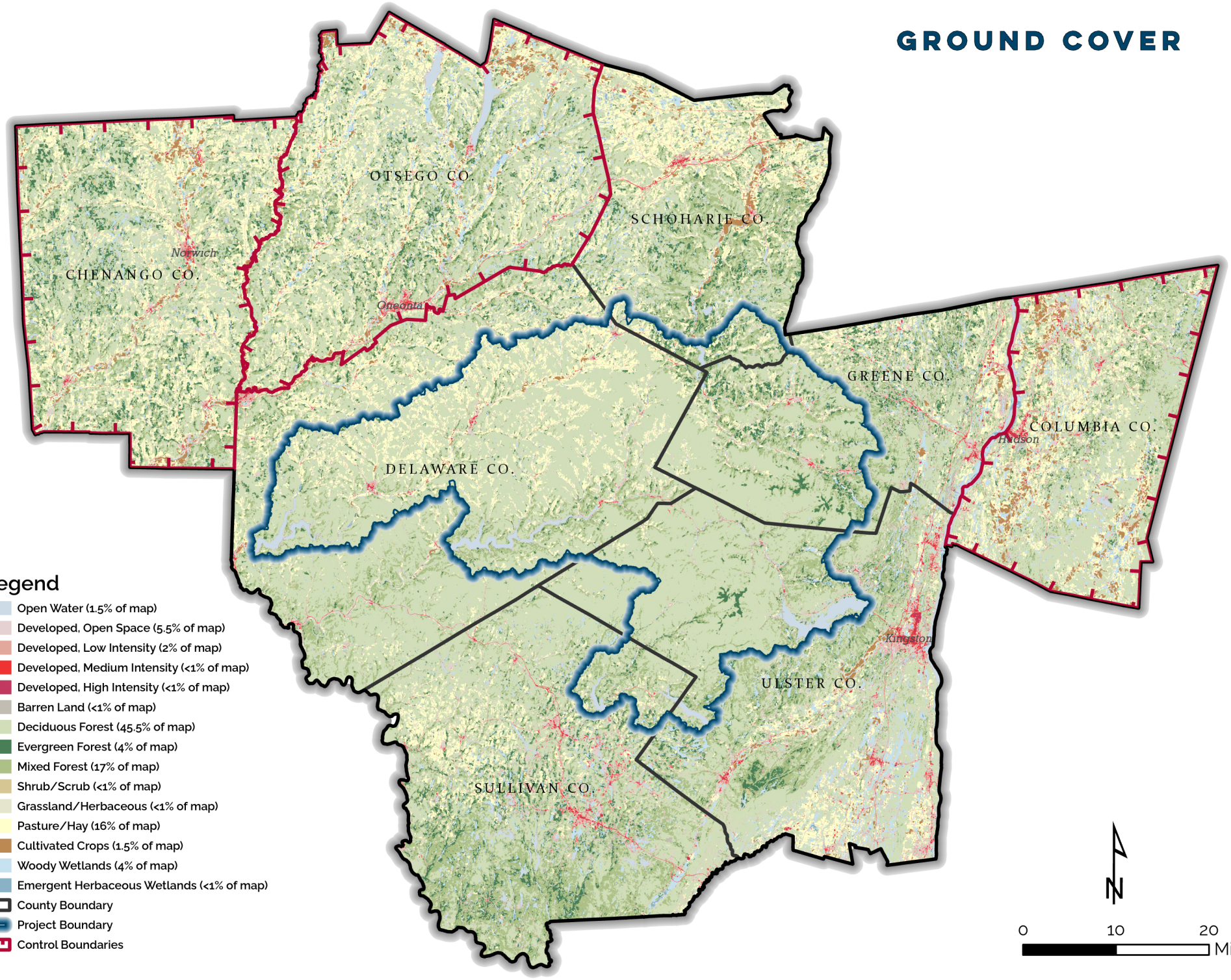
Legend

- Open Water (2% of map)
- Developed, Open Space (4% of map)
- Developed, Low Intensity (<1% of map)
- Developed, Medium Intensity (<1% of map)
- Developed, High Intensity (<1% of map)
- Barren Land (<1% of map)
- Deciduous Forest (61.5% of map)
- Evergreen Forest (3.5% of map)
- Mixed Forest (14.5% of map)
- Shrub/Scrub (<1% of map)
- Grassland/Herbaceous (<1% of map)
- Pasture/Hay (11% of map)
- Cultivated Crops (<1% of map)
- Woody Wetlands (1.5% of map)
- Emergent Herbaceous Wetlands (<1% of map)
- Project Boundary
- County Boundary

QUALITY OF LANDS OF NON-WATERSHED AREAS



GROUND COVER



Weather Impacts / Climate Events (Comparative Analysis of Federal Disaster Declarations, 2011-2024)

New York State is experiencing measurable climate change impacts that are intensifying extreme weather events, particularly heavy precipitation and severe winter storms. According to the New York State Climate Impacts Assessment, average annual temperatures have increased by 2.4°F since 1970, with warming accelerating in recent decades. This warming drives changes in precipitation patterns that directly and dramatically increase and affect flood risk—the state has seen a 10% increase in annual precipitation since 1900, with much of this increase coming from heavy rainfall events.

The Watershed (and the Catskill region at large) faces some of the most pronounced climate change impacts in New York State. The region is projected to have one of the largest increases in total annual precipitation and frequency of extreme precipitation events in the State. Total precipitation is projected to increase between 4-11% by the 2050s and 7-16% by the 2080s relative to the 1981-2010 baseline. Critically, this additional precipitation will likely come from more intense storms rather than gentle, steady rainfall, the kind of events that contribute to flash flooding and overwhelm stormwater infrastructure.

The mountainous terrain of the Watershed exacerbates flood vulnerability. Steep slopes cause rapid runoff, concentrating water into narrow valley bottoms where most development occurs. The Watershed's stream networks respond quickly to heavy rainfall (water level rising rapidly), with limited time for flood warning. Additionally, the northern portions of the Watershed face compounding risks from ice jams during winter-to-spring transitions, which can cause severe localized flooding.

Beyond precipitation and flooding, the Watershed is experiencing increased freeze-thaw cycles that damage infrastructure, more frequent severe winter storms, and changing snowpack dynamics that affect both spring flooding and summer water supply. These changes are not hypothetical future scenarios—federal disaster declarations demonstrate they are already occurring with increasing frequency and severity.

Federal Disaster Declarations in New York State (2011-2024)

Over the past 13 years, New York State has received numerous federal major disaster declarations for extreme weather events. These declarations trigger federal assistance for both emergency response (US Federal Emergency Management Agency (FEMA) Public Assistance) and long-term recovery (FEMA Individual Assistance, US Department of Housing and Urban Development (HUD) Community Development Block Grants for Disaster Recovery, (CDBG-DR)).

Statewide Disaster Assistance Totals:

- FEMA Total Assistance: $18,678,713,186
- HUD CDBG-DR: $9,165,006,963
- Combined Total: $27.8 billion

- Per Capita Assistance: $1,385 (based on state population)

The total does not include routine National Flood Insurance Program (NFIP) claims, state emergency response costs, or private losses not covered by federal programs.

Major Disaster Events Affecting Multiple Regions (2011-2024):

- **Tropical Storm Irene (August 2011)**: The event affected all five Watershed counties plus much of upstate New York. This tropical system brought unprecedented rainfall to the region, with some areas receiving over 10 inches in 24 hours. The storm caused catastrophic flooding in mountain valleys, destroyed infrastructure, and led to the creation of NYC's enhanced flood buyout program.
- **Tropical Storm Lee (September 2011)**: Following just two weeks after Irene, Lee's remnants brought additional heavy rainfall to already-saturated watersheds, causing renewed flooding in areas still recovering from Irene.
- **Hurricane Sandy (October 2012)**: While primarily a coastal event, Sandy's impacts extended inland with high winds and flooding affecting portions of the Watershed.
- **Severe Winter Storms (2014, 2017)**: Multiple declarations for extreme snowfall and ice storms that damaged infrastructure and isolated communities.
- **Hurricane Ida Remnants (September 2021)**: Demonstrated that tropical systems continue to threaten the Watershed, with flash flooding causing fatalities in basement apartments and overwhelming urban stormwater systems.

Notably absent from federal disaster declarations: **extreme heat events**. Despite heat being the leading cause of weather-related deaths nationally, the Stafford Act (which governs disaster declarations) ties federal assistance to physical infrastructure damage. Because extreme heat causes mortality rather than damage to infrastructure or nature, it has never triggered a major disaster declaration—despite being an increasing threat as climate change progresses.

Inside vs. Outside the Watershed: County-Wide Comparative Disaster Analysis

The five Watershed counties show dramatic variation in both disaster frequency and federal assistance received between 2011-2024:

County	% Land in Watershed	# Disasters	Total FEMA $	Per Capita $	SVI Score[34]
Delaware	53%	7	$27,983,200	$627	0.5142
Greene	47%	3	$552,146,983	**$11,487**[35]	0.4076
Schoharie	9%	3	$91,950,071	$3,068	0.3172
Sullivan	7%	5	$8,160,136	$104	**0.8654**
Ulster	31%	7	$32,867,413	$180	0.5511
Watershed Avg	**44,614**	**5.0**	**$32,221,755**	**$3,093**[36]	**0.5311**

Source: Rebuild by Design

[34] Social Vulnerability Context (SVI): CDC SVI scores indicate baseline community resilience - a lower SVI indicates greater resilience in a community, while a higher SVI indicates less resilience/more vulnerability. This is calculated using 16 different factors grouped into four themes: Socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation.

[35] Greene County's figure for per capita disaster assistance was marked as "under review" by Rebuild by Design, so it should be taken with a level of skepticism; this value currently represents the highest per-capita disaster assistance in all of the United States.

[36] Watershed average includes Greene County's anomalous $11,487; median is $627.

The three Control counties were analyzed using identical metrics between 2011-2024:

County	Population (2020)	# Disasters	Total FEMA $	Per Capita $	SVI Score (2022)
Chenango	47,220	7	$15,733,779	$333	0.5082
Columbia	61,570	3	$2,953,496	$48	0.3279
Otsego	58,524	6	$12,443,071	$213	0.2787
Control Avg	**55,771**	**5.3**	**$10,376,782**	**$198**	**0.3716**

Source: Data from Rebuild by Design, table created by CGR Consulting Team

Key Findings:

- Watershed location dramatically increases disaster severity (larger amount of relief money provided). Despite having a similar frequency of disaster declarations (average of 5.3 vs. 5.0), Watershed counties received 15.6 times more per capita assistance on average than comparable Control counties ($3,093 vs. $198). Two factors likely contribute to this disparity: (1) Physical terrain: The Watershed's mountainous topography—with steep slopes causing rapid runoff and narrow valleys concentrating flood damage—may result in more severe disaster impacts when events occur, qualifying communities for higher levels of federal assistance; and (2) Enhanced application capacity: NYCDEP funding and technical support may enable Watershed municipalities to more effectively document damages, prepare comprehensive grant applications, and navigate complex federal disaster assistance programs, resulting in higher recovery of available federal funds compared to Control counties (that have less institutional support). Further research would be needed to quantify the relative contribution of each factor, but both likely play a role in the observed assistance differential.
- **Higher baseline vulnerability compounds risk:** Watershed counties enter disasters with 43% higher social vulnerability (average SVI 0.53) than Control counties (average SVI 0.37).
- Control counties show predictable patterns, Watershed counties show extremes:
  - Control counties exhibit "expected" disaster patterns: assistance is proportional to vulnerability, and outcomes are tightly constrained (ranging $48 to $333).
    - Chenango County highest SVI score (0.5082) received the highest per capita assistance ($333) vs. Columbia County lowest SVI score (0.3279) received the lowest per capita assistance ($48).

  - Watershed counties show extreme variability in assistance (ranging from $104 to $3,068[37]) and paradoxical patterns where outcomes are disconnected from vulnerability or Watershed exposure.

- **A county's proportion of land in the Watershed does not predict assistance levels:** There is no monotonic relationship between the percentage of a county's land in the Watershed and the level of assistance received (e.g., Delaware received $627/capita with 53% of land in the Watershed, while Schoharie received $3,068/capita with 9% of land in the Watershed). However, counties with any amount of land in the Watershed appear to have greater disaster severity than Control counties. This suggests that **disaster exposure is driven primarily by geographic/topographic factors rather than Watershed administrative boundaries**.
- **Two critical anomalies highlight equity and data concerns:**
  - Sullivan County, with the highest social vulnerability (SVI 0.87) and multiple declarations, received the lowest per-capita assistance ($104) among Watershed counties. The combination of high vulnerability and low assistance receipt suggests either: (a) genuinely lower damages despite multiple disaster declarations, (b) barriers to accessing federal assistance in vulnerable communities, or (c) data limitations in capturing assistance to individuals vs. public infrastructure.
    - Research on disaster recovery consistently shows that **vulnerable communities face greater barriers to accessing assistance** due to documentation requirements, language barriers, distrust of government, and few to(or) no resources to help navigate complex application processes. Sullivan's data pattern is consistent with this national finding. Notably, no Control county showed a similar pattern—Columbia County (lowest Control county assistance at $48) had moderate vulnerability (SVI 0.33), not high vulnerability. This suggests Sullivan's paradox may reflect Watershed-specific circumstances or barriers unique to vulnerable communities in the Watershed region.
  - Greene County recorded an extraordinary, unexplained per-capita assistance of $11,487 (more than 18x the next highest), which is flagged as "under review" by the author of the data. This extreme outlier suggests possible data quality issues, concentrated high-value damage (e.g., ski resorts in Hunter/Windham), unique recovery circumstances (such as major infrastructure reconstruction), or higher uptake of available assistance programs due to local capacity/awareness.

Hurricane Irene as a Natural Experiment

Hurricane Irene (2011) affected all five Watershed counties simultaneously, providing a natural experiment to assess differential impacts. All counties received the same presidential

[37] Greene County has been excluded from this range because the data was cited as being under review by the source (see footnote 14).

disaster declaration (DR-4020), experienced the same storm system, yet total damage varied dramatically:

- **Greene County**: Received the vast majority of its total assistance from Irene/Sandy events
- **Schoharie County**: Major infrastructure damage (Schoharie Creek, Route 30 corridor)
- **Delaware County**: Distributed damage across multiple watersheds and towns
- **Sullivan/Ulster**: Moderate impacts relative to other counties

The within-storm variation suggests that **local factors** (infrastructure age/quality, stream management, development patterns, emergency preparedness) matter more than official Watershed status/designation in determining disaster outcomes.

The control county comparison adds context: Chenango County, with similar vulnerability to Delaware (SVI 0.51) and also hit by Irene, received substantially less assistance ($333 vs $627 per capita), suggesting that Watershed terrain amplified Irene's impacts even within the same regional storm system.

Critical Nuances and Limitations to Analysis

- **Within-Watershed variation remains extreme and unexplained**: While Watershed counties collectively differ from Control counties, the 110x range in per capita assistance within Watershed counties ($104 to $11,487) versus the 7x range in Control counties ($48 to $333) indicates that Watershed status alone does not determine outcomes. Local factors—emergency management capacity, infrastructure age and condition, development patterns, local fiscal capacity, community organization—create more variation within the Watershed than the overall Watershed effect creates between groups.
- **Evaluation of the flood protection effects of Watershed programming is complex and multifaceted**: The data showing higher disaster assistance in Watershed counties versus Control counties does not necessarily indicate that Watershed programs lack protective benefits. Several important factors complicate this interpretation:
    - Documented protective benefits: NYC's reservoir system provides substantial downstream flood attenuation. USGS analysis demonstrates that the reservoirs significantly reduce peak flows and moderate flooding downstream. Specifically, analysis of the Ashokan Reservoir shows that "during the floods of 1980, 1996, and again in 2005, the presence of the reservoir significantly reduced the effects of flooding on downstream communities" by attenuating peak discharges on Esopus Creek (USGS OF-2007-1036, p. 10). This benefit extends to other reservoirs in the system. Additionally, land conservation, stream management, and stormwater controls likely provide localized flood protection benefits not captured in county-level disaster assistance totals.
    - Baseline risk differential: The Watershed's mountainous terrain (steep slopes, rapid runoff, narrow valleys) creates inherently higher flood vulnerability than Control counties' topography. Higher disaster assistance may reflect this baseline risk rather than program ineffectiveness. Without Watershed programs — particularly reservoir operations — assistance needs might be even higher.

- Water quality versus flood protection focus: Watershed programs are primarily designed for water quality protection, not comprehensive flood risk reduction. Evaluating them primarily on flood outcomes may not reflect their core objectives or benefits.
- County-level aggregation limitations: County-level disaster assistance data cannot isolate the effects of specific Watershed programs from broader geographic, infrastructural, and socioeconomic factors that influence disaster severity and recovery.

Conclusions

- The disaster assistance data cannot definitively determine whether Watershed programs increase, decrease, or have no effect on flood vulnerability. The higher assistance in Watershed counties likely reflects the region's challenging terrain rather than program failure. The documented flood attenuation benefits of reservoir operations demonstrate that Watershed infrastructure does provide measurable protective benefits to downstream communities. Evaluating the flood protection value of specific Watershed investments would require more granular analysis comparing protected versus unprotected sites within similar topographic contexts.
- **Conversely, Watershed programs show no clear harm**: There is no evidence that Watershed regulations pushed development into more hazardous areas or created barriers that increased vulnerability. If Watershed policies concentrated risk, we would expect a clear relationship between the proportion of a county's land in the Watershed and disaster outcomes. No such relationship exists.
- **Sullivan County has no Control county equivalent**: Sullivan's combination of highest vulnerability and second-lowest assistance is unique. Columbia County has low assistance ($48) but moderate-low vulnerability (0.33), showing expected patterns. Sullivan's pattern suggests either Watershed-specific barriers to assistance access in vulnerable communities, or unique local circumstances requiring investigation.
- **County-level analysis masks critical variation**: A 53% Watershed county includes both 100%-in-Watershed mountain towns and 0%-in-Watershed valley towns. This study's town-level comparison framework would reveal whether disaster impacts concentrate in fully-in-Watershed vs. partially-in-Watershed municipalities.
- **Aggregate assistance obscures equity issues**: FEMA Public Assistance goes to governments while Individual Assistance and HUD CDBG-DR go to residents. Without disaggregated data, we cannot determine if assistance reaches the most vulnerable populations or primarily benefits infrastructure owners and higher-income residents able to navigate complex application processes.

Implications for Policy:

The Watershed region is demonstrably more disaster-prone than comparable areas, but this heightened vulnerability:

- Likely primarily stems from immutable geography (terrain, hydrology) rather than Watershed policy or management

- Varies dramatically within the Watershed based on local factors requiring town-level analysis
- Interacts with social vulnerability in complex ways that may create equity gaps (Sullivan County)
- Will intensify under climate change, requiring Watershed-specific adaptation strategies
- Cannot be addressed by Watershed protection programs alone—disaster resilience requires different tools and approaches than water quality protection

Future climate projections will intensify these patterns: With 4-16% precipitation increases projected for the Catskills by 2050s-2080s, and more of this precipitation falling as intense storms rather than gentle rainfall, the geographic amplification effect will worsen. Watershed communities already face compounding vulnerabilities: steep terrain + rapid runoff + concentrated valley development + higher social vulnerability + climate change = escalating risk that will increasingly separate Watershed from non-Watershed disaster outcomes.

The question is not whether the Watershed is more disaster-prone (it is), but rather: **What specific factors within Watershed communities—topographic, developmental, social, institutional—drive the extreme variability in outcomes, and how can policy address both the average heightened risk and the outlier cases at both extremes?**

Chapter 2: Evaluation of Areas of Development Opportunities and Regulatory Controls

This chapter of the report evaluates the relative impact that being a community in the Watershed had on regulatory burden of development (financial cost and time cost), development potential (land available for development), wastewater rate costs, and environmental violations. This was compared to Control communities to assess the difference in burden associated with these items between the two groups.

Developable Lands Analysis

Key Findings

- There is very little land (less than 1% of total land in the Watershed) that is “developable” in the Watershed. This could pose challenges to new development.
- There is substantially more land (30% of total land in the Control counties) that is “developable” in the Control counties.

Completing a developable lands analysis is crucial for understanding local community vitality because it helps quantify where future growth and change can occur. This type of analysis identifies what portions of land are legally and physically available for development by excluding protected lands, environmentally sensitive areas, and parcels unsuitable for

development due to factors such as poor soils. More information on these different variables is described in the methodology section.

By mapping where development is possible, local governments can forecast the potential for new housing, businesses, and infrastructure, central to keeping rural communities viable. The analysis also highlights constraints like legal protections or environmental limits to help identify opportunities for coordinating growth, guiding investment, and creating revitalization programs.

Developable lands maps for both the Watershed and Control counties are provided at the end of this section.

Methodology

"Developable land" was identified through a series of variables indicating ownership, tax exemptions, and land used for recreation. Lands are considered developable if they are not protected (as defined above) and are free from environmental and physical constraints. The constraints considered were slopes greater than 15%, wetlands in the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), NYS DEC wetlands and their associated 100' buffers, 100' buffers from surface waters and stream centerlines, 300' buffer from NYC reservoirs and tributary systems, and soils determined to be poorly suitable for septic systems previously used by NYCDEP in town assessments.

Parcels that are coded as agricultural (100 class codes), vacant (300 class codes), private forest (910 class code), non-coded, and residential (200 class codes) less than 15 acres were evaluated for developability. These areas were then overlaid with a parcel map. Where these layers overlapped, parcels with less than 2,500 square feet of developable land were eliminated, as were residential parcels where the developable land was less than twice the minimum lot size and/or less than five acres[38]. Five acres was subtracted from each remaining residential parcel to account for the existing development area. The balance that is left after these calculations is the available developable land.

[38] *This analysis **does not** assume that parcels less than 5 acres are undevelopable. The methodology from the earlier Chazen Companies study (referred to in the RFP and suggested as a methodology for this study) was applied to allow a direct, one-to-one comparison and to focus the capacity analysis on larger-scale development sites (5 acres or more). Smaller parcels can and do accommodate development, as reflected in issued single-lot building permits. These permits generally represent infill or individual lot projects that can be supported by existing terrain and infrastructure, in contrast to larger, denser developments, which are more constrained by factors such as infrastructure capacity, slopes, and other physical or environmental limitations.*

Evaluation

Restriction	Agricultural Exempt Properties	Steep Slopes	Wetlands	Flood Zones	Developable Land
Percentage of Land Area in Watershed	16%	57%	4.5%	5%	2,747 acres (less than 1%)

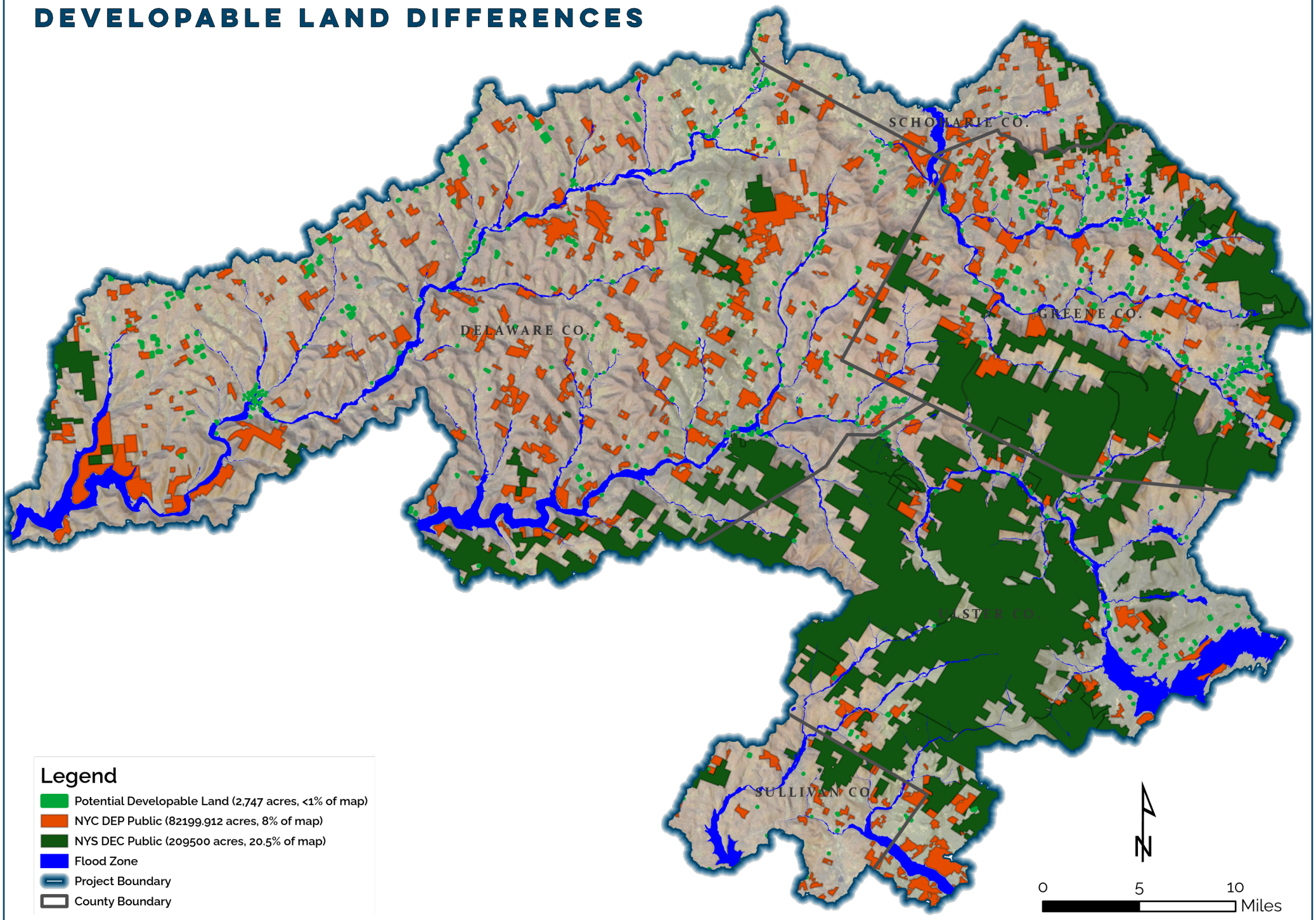
In the Watershed, less than 1% of land falls into the "developable" category[39]. This is likely due to the abundance of conservation areas and development restrictions. The region is also in the middle of the Catskill Mountain Range which contains terrain with steep slopes that are not conducive to development.

In Control counties, about 30% (488,968 acres) of the land area falls into the developable lands category. In general, Control counties are much less steep than those in the Watershed, which significantly influences the amount of land that could be developed.

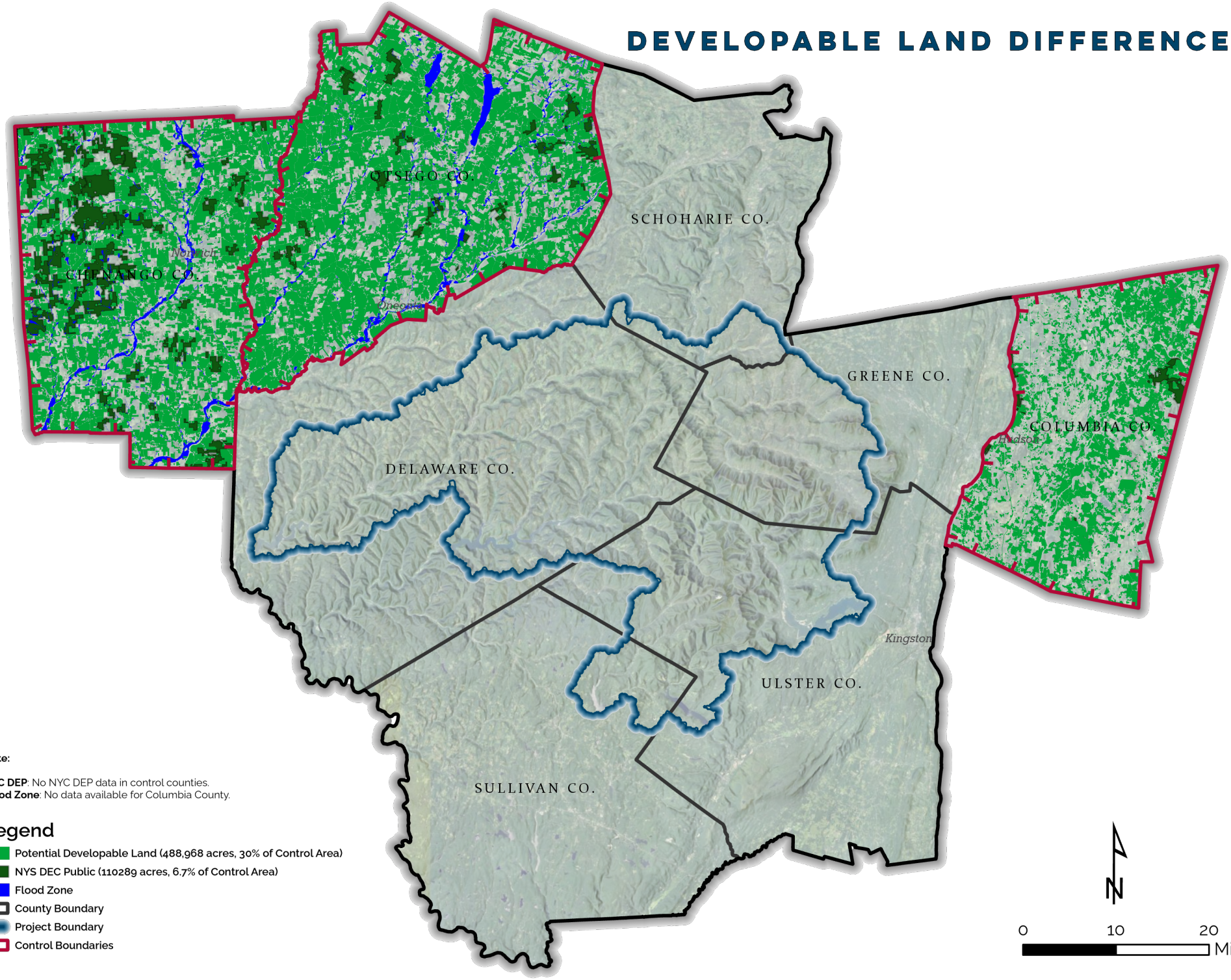
Restriction	Agricultural Exempt Properties	Steep Slopes	Wetlands	Flood Zones	Developable Land
Percentage of Land Area in Control Counties	25.5%	23.5%	9%	5%	488,468 acres (30%)

[39] *The estimate of 2,747 developable acres represents a snapshot of remaining, unconstrained land suitable for larger-scale development sites (generally 5 acres or more), not a cap on the number of new housing units that can be added in the Watershed. The building permit data reflect something different from this evaluation: they capture all new single-family and multi-family units permitted over time, including (1) homes built on smaller parcels under 5 acres; (2) infill construction on scattered vacant lots; and (3) redevelopment or intensification of already developed properties. These types of projects often occur on individual lots or previously subdivided land that is not counted in the 2,747 acres of remaining large, unconstrained sites. In addition, multi-family projects can yield a relatively high number of units on a limited land area.*

DEVELOPABLE LAND DIFFERENCES



DEVELOPABLE LAND DIFFERENCES



Note:

NYC DEP: No NYC DEP data in control counties.
Flood Zone: No data available for Columbia County.

Legend

- Potential Developable Land (488,968 acres, 30% of Control Area)
- NYS DEC Public (110289 acres, 6.7% of Control Area)
- Flood Zone
- County Boundary
- Project Boundary
- Control Boundaries

N

0 10 20 Miles

Summary of Regulatory Burdens

The **Revised 2017 New York City Filtration Avoidance Determination (FAD)** was issued in December 2022 by the New York State Department of Health (NYSDOH) and represents the most current version of the regulatory framework governing the NYC Watershed[40].

The updates in the 2022 FAD reflect the findings of the 2020 National Academies of Science, Engineering, and Medicine Expert Panel Review of the New York City Watershed Protection Program; updated commitments in the City's 2021 Long-Term Watershed Protection Plan (December 2021); and stakeholder input received on the Draft Revised FAD during the 2022 public comment period.

Additional resources available on the New York State Department of Health's official FAD webpage include the Response to Public Comments on the Draft Revised 2017 FAD, the 2017 FAD Compliance Assessment, and the original 2017 FAD (December 2017).

The primary regulatory framework governing activities within the Watershed is the **Watershed Rules and Regulations (WR&Rs)**, which became effective May 1, 1997, and were most recently amended on November 29, 2019. These regulations control activities that could impact water quality across four core regulatory areas: stormwater management, septic system regulations, development controls, and enforcement/compliance:

- **Stormwater Management**: Under the stormwater management requirements, developers and property owners must prepare Stormwater Pollution Prevention Plans (SWPPPs) and implement controls on runoff from construction and development activities. The regulations mandate stormwater requirements for new impervious surfaces and land disturbances and establish Best Management Practices (BMPs) for controlling polluted stormwater runoff, sediment and turbidity.
- **Septic System Regulation**: The septic system regulations establish comprehensive standards for subsurface sewage treatment systems, including detailed requirements for design, installation, and maintenance. Property owners must follow specific provisions for septic system repairs and replacements, with special requirements applying to systems located in phosphorus-restricted and coliform-restricted basins.
- **Development Controls:** Development controls include project review and approval processes for new development, environmental review requirements under the State Environmental Quality Review Act (SEQRA), restrictions on activities near water bodies and sensitive areas, and variance procedures for projects that do not meet standard requirements. These controls work in concert with water quality protection measures that prohibit activities which could contaminate water supplies, establish requirements for handling and storage of potentially harmful materials, control agricultural activities and livestock operations, and protect riparian buffer zones.

[40] Latest FAD Document: https://www.health.ny.gov/environmental/water/drinking/nycfad/docs/nyc_fad.pdf).

- **Enforcement and Compliance**: The enforcement structure includes multiple layers of oversight. The Watershed Enforcement Coordination Committee (WECC) coordinates joint enforcement between NYCDEP and NYSDEC through quarterly meetings to address non-compliance issues and coordinated enforcement protocols for violations.

An additional, unique feature of the Watershed regulatory system is the **Watershed Inspector General (WIG)**. The WIG provides an additional layer of oversight unique to the Watershed. Several stakeholders (engineers and contractors who practice both inside and outside the Watershed) identified the WIG's authority to review approved projects as a source of regulatory uncertainty not present outside the Watershed, though specific data on WIG-related project delays was not provided to us.

The inspection and monitoring framework includes regular inspections of regulated activities, comprehensive water quality monitoring throughout the Watershed, compliance assistance and technical support for property owners, and progressive enforcement actions for violations.

Special Basin Designations

Within the Watershed, certain areas are subject to enhanced protections based on water quality concerns. Phosphorus-restricted basins apply enhanced controls in areas where phosphorus levels exceed 15 micrograms per liter, imposing stricter requirements for septic systems and development. Similarly, coliform-restricted basins provide additional protections in areas with elevated bacterial contamination risk through enhanced septic system requirements and monitoring.

Regional Coordination

Implementation of these regulations occurs through Memoranda of Understanding with NYSDEC for coordinated oversight, local consultation with Watershed communities, technical assistance programs to help applicants comply, and financial assistance programs to offset incremental compliance costs. The WR&Rs are designed to work in conjunction with federal and state environmental laws while providing the additional protections necessary to maintain the high quality of NYC's unfiltered water supply. The Watershed Protection and Partnership Programs managed by CWC provide funding to help cover costs that are required by the WR&Rs but not otherwise required by state or federal law.

Regulatory Comparison to Control Counties and Towns

Understanding how the Watershed Regulations compare to other areas requires examining the regulatory burden on the Control counties and Towns outside the Watershed.

Watershed Regulations are substantially more burdensome than the typical New York State requirements that apply to the Control counties and Control towns:

- The Watershed Regulations incorporate state requirements for septic system setbacks, including NYSDOH Appendix 75-A (for residential systems) and NYSDEC Wastewater Standards (for commercial systems), both of which prohibit septic systems within 100 feet of watercourses and wetlands. These setback requirements apply both inside and outside

the Watershed and therefore do not represent additional Watershed-specific burden. However, the Watershed does impose additional setback requirements beyond state standards: septic systems are prohibited within 300 feet of a reservoir or reservoir stem, and no new impervious surfaces such as roofs or pavement are permitted within 100 feet of a watercourse or 300 feet of a reservoir or reservoir stem.

- **DEP's regular updates to watercourse inventories and the associated determination process:** Properties may contain potential watercourses that require DEP assessment to determine whether they meet the regulatory definition of a watercourse subject to Watershed Regulations. This determination process creates project delays as applicants must wait for DEP to assess whether a feature on their property is a regulated watercourse or not. The challenge is particularly acute for seasonal or ephemeral drainage features that only flow during spring snowmelt or heavy precipitation events. In these cases, projects may experience extended delays while waiting to observe whether the feature dries up during summer months, which would support a determination that it is not a perennial watercourse subject to regulation. This uncertainty affects project feasibility and timelines, as developers and property owners cannot finalize site plans or proceed with construction until DEP makes a watercourse determination. This represents an additional layer of regulatory process not encountered outside the Watershed, where such detailed watercourse assessments are typically not required.
- NYSDEC's minimum threshold requiring SWPPPs under the State's General Permit program is one (1) acre of soil disturbance. The Watershed Regulations (Section 18-39) establish a minimum threshold of two (2) acres of soil disturbance, meaning the Watershed threshold is actually less restrictive than the state standard in terms of acreage. However, the Watershed Regulations include additional qualifying criteria beyond acreage, such as steep slopes and proximity to watercourses/wetlands, which can trigger SWPPP requirements for projects that might not require them under state regulations based solely on acreage.
- Watershed projects must navigate both NYSDEC and NYCDEP regulatory programs, each with different applications, review processes, and requirements. While Individual Residential Stormwater Permits (IRSPs) – which are typically required for residences within 100 feet of perennial streams — rarely require separate SPDES permits, larger development projects may require both NYSDEC SPDES permits and NYCDEP stormwater approvals. This requires developers to understand and comply with two separate regulatory frameworks. The Control towns and counties need only comply with standard NYSDEC environmental regulations, typical municipal zoning and building codes, and standard SPDES construction permits.
- The Watershed Inspector General provides an additional layer of regulatory oversight unique to the Watershed. The WIG can intervene unpredictably in approved projects, creating uncertainty even after other agencies have granted approvals.

Funding Conditions versus Regulatory Requirements

An important distinction exists between actual regulatory requirements mandated by the Watershed Rules and Regulations and conditions attached to voluntary funding programs. County Soil and Water Conservation Districts noted that certain stream design standards,

while not regulatory requirements, apply to projects receiving specific types of Watershed protection funding. This distinction is relevant because property owners and municipalities seeking to offset Watershed compliance costs through available funding programs must evaluate both the regulatory requirements they face and any additional conditions attached to financial assistance. Understanding this landscape helps communities make informed decisions about whether and how to access available support programs.

Financial Mitigation

As a result of its regulatory requirements, NYCDEP is obligated under the FAD, along with other regulatory frameworks and contracts, to allocate significant funding to CWC to assist with projects and developments meeting these requirements. Financial mitigation is conducted through three distinct stormwater cost-sharing programs:

Future Stormwater Program (FSW)

- Eligible projects are those required by the Watershed Regulations that have to do a SWPPP due to new construction, new impervious surfaces, and/or land disturbances over certain acreages within certain distances to watercourses.
- This is a CWC Program. CWC holds the funds and administers the programs without DEP oversight.
- An applicant can elect 50% of DEP & DEC stormwater costs (design, construction, O&M) or 100% of DEP Only stormwater costs.
- Projects that get funded through this program are large businesses, municipal projects, not for profit corporations, or two or more family residences. Small businesses get split between this program and the MOA-145 Program (described below).

MOA-145 Program

- Eligible Projects are those required by the Watershed Regulations that have to do a SWPPP due to new construction, new impervious surfaces, and/or land disturbances over certain acreages within certain distances to watercourses. Also, included under this program are IRSPs, for individual residences adding new impervious surfaces within certain distances to watercourses. Low-income housing projects that have to do SWPPPs get funded from this program. Small business projects that have to do SWPPPs get partially funded from MOA and FSW.
- DEP funded program that CWC administers.
- An applicant can elect 50% of DEP & DEC stormwater costs (design, construction, O&M) or 100% of DEP Only stormwater costs.
- IRSPs are 100% funded.

Retrofit

- This is for EXISTING impervious surfaces where installing a stormwater practice will help correct existing runoff, pollution loading, or erosion. This program is voluntary and not enforced by DEP. An eligible project has to meet certain pollutant reducing standards.
- Jointly reviewed by DEP and CWC. DEP has oversight on what projects get approved. CWC administers and coordinates the program.
- Funding comes from CWC, through contracts with DEP.
- Applicants receive 100% design and construction stormwater costs, and 17.6% of final costs for O&M.

While the regulatory burden remains higher in the Watershed, this financial support that NYCDEP provides is significant assistance to offset the incremental costs that exceed standard state requirements.

An evaluation of funding opportunities can be found in the Funding Evaluation section of this report.

Funding Eligibility Based on Watershed Boundary

A critical aspect of the Watershed funding programs is that eligibility is determined by the location of the project within the Watershed boundary, not by the location of the property owner's residence. This distinction has important practical implications for property owners whose land straddles the Watershed boundary.

For instance, the determining factor for septic funding eligibility is the location of the septic system itself. If a septic system is located inside the Watershed boundary, it is eligible for funding programs even if the house it serves is outside the Watershed boundary. Conversely, if a septic system is outside the Watershed boundary but serves a house inside the Watershed, it is not eligible for funding.

This project-location-based approach ensures that funding is directed to infrastructure that directly impacts water quality within the Watershed, regardless of where property owners reside. The physical location of the infrastructure requiring funding—whether septic systems, stormwater systems, or other improvements—is the sole determinant of eligibility.

An evaluation of the time and cost impacts to development in the Watershed versus Control communities is explored in the next section.

Regulatory Time and Cost Comparison

Based on quantitative data and conversations with NYCDEP, feedback from experienced engineers and contractors, and comparative analysis with the Control group, this section documents the differential impacts to time and cost burdens on development in the Watershed due to regulations.

Quotes and qualitative/descriptive findings referenced in this text are from stakeholder focus groups and interviews; for more information on how this information was sourced and the methodology (and limitations), refer to the stakeholder engagement methodology section.

Key Findings:

- According to several engineers interviewed (as well as shown in sample project costs), the cost of development compliance with Watershed Regulations can reach 1.5-2X the cost of projects outside the Watershed.
    - Caveat: Multiple layers of regulatory review, enhanced design standards, and interagency coordination requirements drive these increases, in addition to several other variables referenced in the body of the text.
- Timeline uncertainty/inconsistency causes additional burden by creating planning challenges for property owners and businesses. For seasonal businesses or projects with construction season constraints, even a two-month approval timeline can determine project feasibility. Review periods/approval can extend beyond construction season as NYCDEP may delay project approvals until sites are completely stabilized with 80% grass coverage.
- DEP maintains average residential septic approval timelines below the regulatory 45-day standard from completeness to approval across all years of data provided (2019-2025). However, the timeline data shows both a significant increase in average timelines beginning in 2022 and a growing number of individual applications that exceed the 45-day standard.
- Septic design fees are 25-150% higher inside the Watershed ($2,750-$5,000) compared to outside the Watershed ($1,500-$2,200).[41]
- The Watershed Regulations have evolved to provide flexibility for septic system alterations over the years – allowing for designs to meet current standards "to the extent possible" where site constraints may prevent full code compliance (since the 1990s for residential system repairs and since 2019 for commercial system alterations and modifications (Section 18-38(b)(4)). However, property owners must demonstrate through engineering design that the proposed system, while not meeting full code, will not present a threat to public health or water quality. Design engineers have developed standard approaches for these non-conforming systems, and DEP reviews them through the same process as new systems (20-day completeness review).
    - Stakeholders indicated that while the regulatory flexibility exists on paper, the review process and burden of proof requirements still create uncertainty (i.e., no clear schedule or timeline for when development will proceed/how to prepare for and

[41] As noted in the first bulleted key finding, the reader should reference the cost evaluation sections in the text for important caveats/limitations to the data.

schedule future phases of work, etc.) and create procedural complexity compared to outside the Watershed, where alterations may receive minimal scrutiny.

- Stormwater regulations create time and cost burdens. However, analyzing stormwater regulatory impact requires distinguishing between two fundamentally different project types subject to different scales of regulatory review:
  - Individual Stormwater Waters (IRSPs): Smaller-scale permits for single-family residences within 100 feet of perennial streams. These applications are typically a few pages in length and receive 100% funding through the MOA-145 program.
  - Stormwater Pollution Prevention Plans (SWPPPs): Large-scale permits for major development projects. These applications can be thousands of pages in length, go through multiple review cycles with DEP, and represent the bulk of regulated stormwater projects in the Watershed.

- **Stormwater timeline (2021-2025 data):** "Avg. Overall Timeline" and "Median Timeline" data tracks total elapsed calendar time from initial application submission to DEP through to final approval for the 72 sample projects. However, this timeline includes both NYCDEP's active review periods and periods when the regulatory clock is stopped awaiting applicant responses.
  - **SWPPPs (2021-2025 NYCDEP data):** The average total elapsed time from Notice of Complete Application (NOCA)[42] to approval was 73 days, with a median of 49 days. The time from initial application to NOCA averaged 37 days (median 21 days), reflecting the iterative process of achieving application completeness. For SWPPP projects, only 43% achieved approval within 45 calendar days of the Notice of Complete Application (NOCA).
  - **IRSPs (2021-2025 NYCDEP data):** Individual residential stormwater projects fared much better than SWPPPs, averaging 29 days for overall timeline with 100% of projects completed within 45 calendar days of NOCA. However, these represent a small fraction of total stormwater applications—only 7 out of 79 projects in the dataset.
  - Although NYCDEP's methodology described above **is in-keeping with the Watershed Regulations**, the on-the-ground reality of the regulatory burden to property owners in the Watershed was explored. As DEP's methodology does not take all variables into consideration to the timeline as experienced by property owners, **the difference is not a matter of data accuracy, but of what is being measured—DEP's internal review efficiency versus property owners' total project experience.**
    - The on-the-ground reality for an applicant considers all time periods regardless of who is responsible for delays, providing the property owner's lived experience of total project duration.

[42] Notice of Complete Application (NOCA) is when a stormwater application is deemed fully complete and ready for review for DEP, with all checklist items completed/included. However, the time from when an application is initially received by DEP to NOCA can be extensive; see additional narrative later in this section explaining this caveat.

- Based on analysis of CWC stormwater project data (2021-2025), the experience of property owners navigating the stormwater approval process–and getting to approval– includes time periods not captured in DEP's active review metrics.[43]
  - SWPPPs (Large Development Projects - Majority of Regulated Projects):
    - **(i)** Average design time: 9 months, 24 days (from initial DEP site visit to first application submission)
    - **(ii)** Average DEP review time: 4 months, 20 days (from application receipt to approval)
    - **(iii)** Based on a sample of 57 SWPPP projects over the past 5 years, 32% received DEP approval within 65 days of DEP application receipt. This timeframe includes DEP's 20-day application completeness determination period, the 45-day technical review period, and any clock stoppages associated with applicant responses or plan revisions.
  - IRSPs (Individual Residential Projects - Smaller Scale, Less Common):
    - **(i)** Average design time: 6 months, 7 days
    - **(ii)** Average DEP review time: 1 month, 3 days

- Comparing stormwater project timelines inside versus outside-the-Watershed is not comparable because NYSDEC administers a self-certification General Permit program with no technical review, while DEP conducts individual technical review of each SWPPP. These represent fundamentally different regulatory frameworks rather than different timelines for equivalent processes.
  - Although the comparison cannot be made because of this limitation, the fact that DEP conducts individual technical reviews of SWPPPs while this does not exist elsewhere emphasizes additional regulatory burden on the Watershed.

- Stormwater regulations create substantially higher financial burdens than septic requirements: Average stormwater design costs ($17,789-$35,578) are 3-7x higher than septic design costs ($2,750-$5,000). Average construction costs for SWPPPs exceed $185,000-$370,000.
  - Additionally, most SWPPP projects receive only 50% cost-share funding, requiring property owners to cover the remaining 50% of all costs. Over 2019-2024, property owners paid approximately $15+ million in unreimbursed stormwater compliance costs.

Septic System Design and Approval

The Watershed Regulations (Section 18-38) establish enhanced requirements for subsurface sewage treatment systems (SSTS) that exceed standard New York State Department of Health

[43] See body of text for description of the variables that go into this timeline review.

requirements. These include mandatory 100% reserve absorption fields (for new constructions, only), enhanced setbacks from water bodies, and specialized soil testing witnessed by DEP staff.

The regulatory timeline for septic systems specifies 10-20 days for completeness of application determination and 20-45 days for final approval, depending on system type. However, the process involves several stages before formal application submission, including pre-application meetings (particularly with engineers inexperienced working in the Watershed), witnessing soil testing, watercourse testing, and coordination with multiple agencies on issues such as State Environmental Quality Review Act (SEQRA) review, DEC wetland determinations, and floodplain permits.

A NYCDEP staff member explained that these stages before the application on projects in the Watershed take a long time. This preliminary work "could be months of preliminary work that goes on before the formal application," according to the staff member.

A key insight from the NYCDEP staff member is that most applications are not deemed complete upon first submission. The two most common missing items are SEQRA determinations and soil testing results. Experienced engineering firms that regularly work in the Watershed understand this pattern and incorporate it into their project timelines, sometimes submitting applications knowing the applications are incomplete simply to "start the clock" and demonstrate progress to their clients.

Important Methodological Limitation: This comparison primarily reflects practitioner experiences with residential septic systems and county health department reviews outside the Watershed. For non-conventional and complex commercial systems outside the Watershed in areas without county health departments, NYSDOH conducts reviews. Review timeframes for NYSDOH approval of complex systems comparable to those reviewed by DEP inside the Watershed were not available for this study. Therefore, the comparisons presented here may overstate the differential for complex systems, as they primarily compare DEP review of all system types to local code enforcer review of conventional systems outside the Watershed. A more complete comparison would require NYSDOH review data for similarly complex projects.

Time Evaluation

CWC tracks residential septic system approval timelines to monitor NYCDEP's regulatory performance in the Watershed. The data in the table below summarizes residential septic applications received from January 1, 2019 through June 30, 2025, providing a comprehensive view of approval timelines over a six-and-a-half-year period.

	2019	2020	2021	2022	2023	2024	2025	AVG
Avg # Days from Design Rec'd to Approved	23.4	21.2	28.6	50.3	54.0	60.8	56.3	**42.1**

Avg # Days from Deemed Complete to Approved	10.8	9.8	12.2	26.8	24.9	34.6	29.4	**21.2**
Total # Applications over 45 Days	10	11	22	34	32	44	29	**26**

Source: CWC, 2025

The data reveals that DEP maintains average residential septic approval timelines below the regulatory 45-day standard from completeness to approval across all years. However, the timeline data shows both a significant increase in average timelines beginning in 2022 and a growing number of individual applications that exceed the 45-day standard.[44]

Engineers and contractors working both inside and outside the Watershed reported markedly different approval timelines:

- One engineer who designs approximately 80 septic systems annually across upstate New York stated that NYCDEP approval is "completely unpredictable" and ranges from six weeks to over one year, while approvals outside the Watershed take one to three weeks maximum.
- Several other practitioners reported that DEP Kingston reviews typically take 6-12 weeks, though one noted that "often they are very minor things that don't affect design or construction, but cause long delays."
- Another engineer's projects in Delaware County in the Watershed received NYCDEP approval within 1 month of clock time with responsive communication throughout. In contrast, one of his Ulster County projects under County delegation outside of the Watershed showed severe delays: 1 project waited over 4 months for approval after multiple inquiries, while another took 7 months despite revised plans being submitted back to the County within 1 week of initial comments.

Notably, some engineers find NYCDEP review more efficient than certain County health departments. One practitioner reported that he "typically finds [that] County Health Departments take twice as long for reviews outside the Watershed than NYCDEP takes for projects inside the Watershed." However, this appears to vary significantly by jurisdiction—Schoharie County approves plans in approximately two weeks, while Ulster County's process can extend for months.

[44] The CGR Consulting Team requested statewide septic program data from the NYS Environmental Facilities Corporation in September 2025 to use as a comparison to performance data in the Watershed; however, the data had not been received at the time this report was prepared, therefore a comparison could not be conducted.

Cost Differences[45]

The enhanced requirements translate directly into higher design costs. Based on practitioner feedback, septic design fees show a clear differential:

Location	Fee Range	Notes
Outside Watershed (no county health department review)	$1,500	Engineer feedback
Outside Watershed (with county health department review)	$1,750-$2,000	Multiple engineer sources
Inside Watershed (residential)	$2,750-$5,000	Multiple engineer sources
CWC Schedule of Values[46]	Site Investigation: $1,000 Design: $2,500-$5,700 Construction Supervision: $1,000-$1,500 Total: $4,500-$8,200	CWC reimbursement rate (2025)

One engineer explicitly stated that he needs to "charge more for designs inside the Watershed due to back and forth on design review with NYCDEP."

[45] Important Methodological Limitation: Comparing septic system costs between Watershed and Control areas is complicated by significant differences in physical site conditions that are independent of regulatory requirements. Soil characteristics, topography, slopes, and bedrock presence are major cost drivers for septic system installation. The Watershed — particularly in Delaware County— has challenging terrain with steeper slopes and different soil compositions than areas outside the Watershed. These physical differences can significantly impact installation costs regardless of regulatory oversight. Therefore, cost differences observed between Watershed and Control areas may reflect these inherent site challenges as much as, or more than, regulatory burden differences. Readers should interpret cost comparisons with this important caveat in mind.

[46] These values are representative of CWC's 2025 schedule of values for reimbursement; the range represents costs based on the type of system as well as residential versus non-residential. These values are only for conventional systems. Modified Conventional and Alternate Septic Designs are each more expensive respectively, for both Design and Construction Supervision values. Commercial and non-conventional systems requiring NYSDOH review outside the Watershed may have different cost differentials.

One engineer provided residential septic project examples showing gaps between actual costs and CWC reimbursement.

Project Location	Site Evaluation & Design Cost	CWC Reimbursement	Gap
T. Hurley, Ulster County	$6,432.50	$3,500.00	-$2,932.50
T. Olive, Ulster County	$3,705.00	$3,220.00	-$485.00
T. Middletown, Delaware County	$7,287.50	$3,750.00	-$3,537.50
T. Shandaken, Ulster County	$7,450.00[47]	$7,450.00	$0.00
T. Woodstock, Ulster County	$3,915.00	$3,500.00	-$415.00

Source: Local professional engineer practitioner (performs Watershed and non-Watershed work)

This engineer noted that overall, Watershed septic project costs can be "1.5 to 2X the cost outside the Watershed," though review times are comparable. The cost differential stems partially from NYCDEP's comprehensive enforcement of all applicable regulations—not just DEP-specific rules, but also DOH and DEC requirements. The cost is also driven by variables such as the lack of available fill material inside of the Watershed, resulting in material being shipped long distances to sites, or the cost for advanced treatment and larger size systems in the Watershed. Outside the Watershed, regulators allow reduced absorption field sizes when Advanced Treatment Units (ATUs) and other advanced technologies are used. However, this size reduction is not permitted in the Watershed, requiring full-sized absorption fields even when advanced treatment technology is employed. This results in higher land requirements and installation costs for Watershed properties. The stricter standard is applied because treating wastewater decreases organic matter, proteins, and other compounds in drinking water that can cause disinfection byproducts (DBPs), necessitating more conservative absorption field sizing despite advanced treatment.

Another engineer from a focus group of practitioners articulated another view on the situation: "I prefer to do work inside the Watershed." His reasoning revealed a deeper issue about regulatory consistency: Inside the Watershed, all engineers operate under the same enforced

[47] This project was for site evaluation, design, and construction supervision (different from the other 4 listed projects).

rules, creating a level playing field, while outside the Watershed, limited oversight creates ethical dilemmas—clients may expect engineers to "exaggerate soil data to give them a cheaper septic system" or bypass regulations "because no one is looking."

Another practitioner described experiencing "multiple system redesigns of what was agreed to either in the field or via conferencing," reflecting tension between design professional judgment and agency review preferences. His concern centered on situations where DEP reviewers want designs executed "their way" rather than accepting code-compliant alternatives developed by licensed professionals. When this happens, as he noted, someone should pay for the additional engineering work beyond the design professional absorbing the cost.

Limitations on Development Potential

Beyond direct cost and time impacts, alterations to septic systems require NYCDEP review and approval, creating a procedural difference from areas outside the Watershed where such alterations may not trigger regulatory review.

The Watershed Regulations have evolved to provide flexibility for altered systems. Since the 1990s, residential system repairs have been allowed to meet current standards "to the extent possible" rather than requiring full code compliance. In 2019, this flexibility was extended to commercial system alterations and modifications (Section 18-38(b)(4)), allowing systems to be designed "to the extent possible" where site constraints prevent full code compliance. As a result, the vast majority of altered systems in the Watershed do not meet full code requirements for setbacks, reserve areas, or other specifications.

However, this flexibility comes with requirements not present outside the Watershed. Property owners must demonstrate through engineering design that the proposed system, while not meeting full code, will not present a threat to public health or water quality. This typically involves using advanced treatment systems (ATUs), modified trench configurations, and oversized septic tanks that provide enhanced treatment even with reduced setbacks or constrained sites. Design engineers have developed standard approaches for these non-conforming systems, and DEP reviews them through the same process as new systems (20-day completeness review).

Stakeholders indicated that while the regulatory flexibility exists on paper, the review process and burden of proof requirements still create uncertainty and procedural complexity compared to outside the Watershed, where alterations may receive minimal scrutiny. As one CWC representative noted, even modest business expansions require navigating the DEP review process to demonstrate that site-constrained systems will adequately protect water quality, a requirement that does not exist in most areas outside the Watershed

Stormwater Application and Approval

Timeline Evaluation

NYCDEP provided timeline data for stormwater project applications in the Watershed (January 1, 2021 through June 30, 2025) measuring active regulatory review periods.

NYCDEP measures active review time when applications are under DEP review. The regulatory "clock" stops when DEP is awaiting information from applicants, awaiting other agency approvals, or when projects are experiencing delays unrelated to DEP review. This measures DEP's internal review efficiency.

Analysis of the application data in the Watershed from January 2021 through June 2025 reveals significant differences between project types and substantial variation in approval timelines.

Project Type	Sample Size	Avg. Overall Timeline	Median Timeline	Range	% Meeting 45-Day Approval
Stormwater (SWPPP)	72 projects	110 days (3 months, 21 days)	92 days (3 months, 2 days)	2-448 days	43%
Individual Residential SPPP (IRSP)	7 projects	29 days	36 days	5-54 days	100%

Source: NYCDEP stormwater application data

SWPPPs: The “Avg. Overall Timeline” and “Median Timeline” data tracks total elapsed calendar time from initial application submission through final approval for the 72 sample projects. However, this timeline includes both NYCDEP's active review periods and periods when the regulatory clock is stopped awaiting applicant responses.

The average total elapsed time from Notice of Complete Application (NOCA)[48] to approval was 73 days, with a median of 49 days. The time from initial application to NOCA averages 37 days (median 21 days), reflecting the iterative process of achieving application completeness. For SWPPP projects, only 43% achieved approval within 45 calendar days of the Notice of Complete Application (NOCA).

IRSPs: Individual residential stormwater projects fared much better than SWPPPs, averaging 29 days for overall timeline with 100% of projects completed within 45 calendar days of NOCA. However, these represent a small fraction of total stormwater applications—only 7 out of 79 projects in the dataset.

[48] Notice of Complete Application (NOCA) is when a stormwater application is deemed fully complete and ready for review for DEP, with all checklist items completed/included. However, the time from when an application is initially received by DEP to NOCA can be extensive; see additional narrative later in this section explaining this caveat.

A NYCDEP staff member explained the timeline dynamics outlined above: once NYCDEP issues technical comments during the 45-day review period, "it kind of stops the clock." The applicant response time to NYCDEP's comments can range from 30 to 90 days, extending the overall timeline well beyond the nominal 45-day period. This iterative review process—where DEP reviews, comments, waits for applicant response, then reviews revisions—means that the total calendar time from NOCA to approval typically extends beyond DEP's 45-day active review requirement. On larger projects, the staff member estimates, anecdotally, that the typical timeframe from application to approval is "about three months," though it "could take six to eight months" on complex projects.

The data cannot distinguish between time periods when DEP's regulatory clock is actively running versus stopped awaiting applicant responses. Therefore, while the 73-day average indicates lengthy overall timelines for SWPPPs review, it does not necessarily indicate DEP exceeding its 45-day review requirement, as much of this time may reflect applicant response periods and multiple review cycles.

Important Caveat

Although NYCDEP's methodology described above is in-keeping with the Watershed Regulations, it is important to discuss the on-the-ground reality of the regulatory burden to property owners in the Watershed, as discussed with engineers, contractors, CWC staff, and other stakeholders. As DEP's methodology does not take all variables into consideration to the timeline as experienced by property owners, **the difference is not a matter of data accuracy, but of what is being measured—DEP's internal review efficiency versus property owners' total project experience.**

The on-the-ground reality for an applicant considers all time periods regardless of who is responsible for delays, providing the property owner's lived experience of total project duration.

Prior to DEP receiving an initial application, there is a pre-application period (initial site visit, engineering design development, iterative consultation with DEP staff) before formal application submission. This period represents the real time property owners spend preparing applications that will meet DEP requirements but is not counted in DEP's active review timeline.

DEP tracks the 45-day approval window from Notice of Complete Application (NOCA) to approval. However, substantial time elapses between when DEP receives an application and when it is deemed complete. During this period, DEP reviews the submission for completeness and issues requests for missing information. Based on analysis of CWC stormwater project data (2021-2025), the experience of property owners navigating the stormwater approval process–and getting to approval– includes time periods not captured in DEP's active review metrics.

- SWPPPs (Large Development Projects - Majority of Regulated Projects):

- Average design time: 9 months, 24 days (from initial DEP site visit to first application submission)
- Average DEP review time: 4 months, 20 days (from application receipt to approval)
    - Based on a sample of 57 SWPPP projects over the past 5 years, 32% received DEP approval within 65 days of DEP application receipt. This timeframe includes DEP's 20-day application completeness determination period, the 45-day technical review period, and any clock stoppages associated with applicant responses or plan revisions.

- IRSPs (Individual Residential Projects - Smaller Scale, Less Common):
    - Average design time: 6 months, 7 days
    - Average DEP review time: 1 month, 3 days

Recommendation for Improved Transparency and Efficiency

Given the difference between the timelines presented above, stakeholders identified several improvements that would reduce uncertainty and burden in the stormwater design and application process while maintaining water quality protection:

1. **Material Impact Standard for Clock Stoppages**: DEP should only stop the regulatory clock for issues that materially impact project quality or water quality protection, not for minor administrative deficiencies. As one stakeholder noted regarding septic reviews, "Kingston DEP staff can issue comments later on for minor things that don't affect the quality of the plan"—the same principle should apply to stormwater reviews.

2. **Public Documentation of Review Status**: Create transparency around why applications are deemed incomplete and why the regulatory clock is stopped. Even if only shared with CWC (rather than fully public), this accountability would help stakeholders understand delays and identify systematic issues. This could be incorporated into the online dashboard recommended in Chapter 4.

3. **Streamlined Completeness Review**: Establish clearer standards and faster determinations for application completeness to reduce the pre-NOCA period that extends total project timelines.

Timeline Comparison of Inside Versus Outside the Watershed

Comparing these timelines to outside-the-Watershed projects is not comparable because NYSDEC administers a self-certification General Permit program with no technical review, while DEP conducts individual technical review of each SWPPP. These represent fundamentally different regulatory frameworks rather than different timelines for equivalent processes.

Although the comparison cannot be made because of this limitation, the fact that DEP conducts individual technical reviews of SWPPPs while this does not exist elsewhere emphasizes additional regulatory burden on the Watershed.

Financial Cost Analysis[49]

The financial burden of stormwater regulations significantly exceeds septic system costs and represents one of the most substantial regulatory impacts documented in this study.

Over the past five years (2019-2024), CWC's Board approved $15,120,599 in stormwater design and construction funding. However, because the majority of SWPPP projects receive only 50% cost-share funding, the actual total project costs borne by Watershed property owners substantially exceeds the funded amount.

Average Project Costs (2019-2024 CWC Data):

Based on five years of CWC funding approvals, average costs per project were:

Project Component	CWC-Funded Amount	Actual Total Cost*
Design Only	$17,789	$35,578
Construction Only	$185,216	$370,432
Combined Design & Construction	$149,479	$298,958

*Most projects receive 50% cost-sharing, requiring property owners to cover remaining 50%

Comparison to Septic System Costs:

The cost differential between septic and stormwater regulations is dramatic:

- **Septic design fees**: $2,750-$5,000 (as documented earlier in this section)
- **Stormwater design costs**: $17,789-$35,578 average (3-7x higher than septic)
- **Stormwater construction costs**: $185,216-$370,432 average

[49] Financial data based on CWC Board-approved funding amounts for stormwater projects (2019-2024)

This cost differential reflects both the technical complexity of large-scale stormwater management and the mandatory nature of compliance—property owners face violations and fines if they do not comply with SWPPP requirements.

Mandatory Compliance and Enforcement:

Unlike some voluntary Watershed programs, stormwater requirements are mandatory regulatory obligations. Property owners who fail to comply receive violation notices and face potential fines from DEP. This mandatory nature, combined with the 50% cost-sharing structure for most projects, creates substantial financial pressure on development projects in the Watershed. While the cost-sharing programs provide important assistance (covering $15+ million over five years), property owners have borne an approximately equal amount in unreimbursed costs during the same period.

Practitioner Observed Cost and Timeline Differences

Several engineers who participated in a focus group and interviews reported that stormwater reviews create the most significant differentials between Watershed and non-Watershed work. One practitioner provided a concrete example: in the Watershed, a residential project requiring stormwater measures under NYCDEP regulations (but not State regulations) added "roughly 60 days to the project timeline" and cost the homeowner "an additional $6K in design fees and an additional $25K in construction costs" when compared to a project outside the Watershed.

Many engineering firms emphasized that stormwater cost differentials between projects in the Watershed and outside the Watershed are particularly difficult to quantify because commercial and land development projects are inherently unique – regardless of where they are. However, representatives from one firm estimated the increase in cost in Watershed projects "can vary from 0% to about 50% higher [than outside the Watershed], depending primarily on what the cost is being compared to, especially in terms of the policies and practices of local reviewing engineers,”.

Wastewater Treatment Facility (WWTF) Approvals

The Watershed Regulations (Section 18-36) impose enhanced treatment requirements on wastewater treatment facilities, including mandatory phosphorus removal, sand filtration for all discharges, and specific pathogen removal standards for surface discharges. The timeline follows the same structure as stormwater: 20 days for completeness determination and 45 days for approval following NOCA.

DEP provides funding through the Wastewater Treatment Plant Upgrade Program for both regulatory upgrades and SPDES upgrades at existing non-City-owned facilities. This funding helps offset the costs of enhanced treatment requirements specific to Watershed protection.

Limited comparative data is available for WWTF approvals, as these projects are less common and highly variable in scope and complexity. The enhanced treatment standards represent clear additional costs compared to standard SPDES requirements, but quantification requires project-specific analysis.

Environmental Violations Evaluation

In order to compare environmental violations issued by several agencies (NYCDEP, NYSDEC, NYSDOH) within and outside the Watershed, the CGR Consulting Team requested and analyzed data from each agency. This is important to evaluate to see whether enforcement action is more or less strict inside the Watershed.

The NYCDEP does not issue environmental violations to communities that are not inside the Watershed because they are outside of its regulatory jurisdiction. Therefore, no data is provided for the Control group from NYCDEP. Despite the lack of comparison, it can be seen that the majority of communities inside the Watershed receive additional regulatory enforcement from the DEP that non-Watershed communities do not experience.

Limitations to Comparison

The data provided by NYCDEP and presented here are the violations presented to NYS Department of Health (NYSDOH) as a part of the Semi-Annual Filtration Avoidance Determination (FAD) report that NYCDEP is contractually obligated to provide to NYSDOH.

It is important for the reader to understand that the vast majority (over 90%) of "violations" tracked and managed by NYCDEP and reported to NYSDOH are septic systems identified by CWC as "failing or likely to fail." CWC's Septic Program encourages proactive and voluntary self-reporting of septic system failures. CWC in turn provides funding to assist property owners in repairing their systems to come into compliance to the extent practicable. As property owners agree to participate in the CWC Septic Program, CWC shares this data with NYCDEP so the agency is made aware of potential water quality issues. NYCDEP does not issue formal notices of violation (NOVs) for the septic systems of property owners who voluntarily enroll in CWC's septic repair program unless the system is significantly failing, impacting water quality, or in need of an immediate mitigative response.

As such, the significant majority of cited total violations presented below and provided by NYCDEP are not official or formal NOVs, but rather are septic systems that are being repaired and reimbursed by CWC to proactively protect water quality and comply with the Watershed Regulations.

In reality, DEP issued a total of 102 formal NOVs in the Watershed between January 2014 and July 2025, or an average of nine (9) NOVs per year.

Evaluation of NYCDEP Violations - Inside the Watershed

The NYCDEP provided data from January 1, 2015 through December 31, 2024 on environmental violations issued to communities within the Watershed. It issues violations for:

- **Septic Repair:** Violations issued when work is performed improperly, illegally, or a failed system is not corrected. The specific violations often relate to protecting the city's drinking water supply. Examples: Failed or likely to fail systems, discharge of untreated wastewater, illegal connections, etc.

- **Stormwater:** Violations for stormwater are issued in an effort to reduce pollution and runoff due to stormwater. Examples include illegal discharges, improper waste management, and failures related to construction-site regulations and maintenance.

The following tables summarize violations within each town inside the Watershed from 2015-2024, broken out by Watershed county.

Delaware County

	Septic Repair	Stormwater	Total
Town of Andes	54	0	54
Town of Bovina	28	1	29
Town of Colchester	11	0	11
Town of Delhi	54	1	55
Town of Deposit	No data	No data	No data
Town of Franklin	6	0	6
Town of Hamden	27	1	28
Town of Harpersfield	10	0	10
Town of Kortright	48	1	49
Town of Masonville	8	0	8
Town of Meredith	25	0	25
Town of Middletown	147	0	147
Town of Roxbury	91	3	94
Town of Sidney	1	0	1
Town of Stamford	36	0	36
Town of Tompkins	37	0	37

Town of Walton	109	0	109
TOTAL, Delaware County	692	7	699

Source: NYCDEP

In Delaware County, the Town of Middletown (100% of Town located inside the Watershed boundary) had the most violations issued, followed by Walton (90% inside the Watershed boundary), and Roxbury (100% inside the Watershed boundary).

Greene County

	Septic Repair	Stormwater	Total
Town of Ashland	20	3	23
Town of Halcott	20	0	20
Town of Hunter	11	0	11
Town of Jewett	62	2	64
Town of Lexington	38	0	38
Town of Prattsville	19	2	21
Town of Windham	60	8	68
TOTAL, Greene County	230	15	245

Source: NYCDEP

In Greene County, the Town of Windham (100% of Town located inside the Watershed boundary) had the most violations issued (as well as the highest number of stormwater violations of any other town in the Watershed), followed by Jewett (100% inside the Watershed boundary), and Lexington (100% inside the Watershed boundary).

Schoharie County

	Septic Repair	Stormwater	Total
Town of Broome	No data	No data	

Town of Conesville	38	0	38
Town of Gilboa	12	2	14
Town of Jefferson	3	0	3
TOTAL, Schoharie County	53	2	55

Source: NYCDEP

In Schoharie County, the Town of Conesville (85% inside the Watershed boundary) had the most violations, followed by Gilboa (30% inside the Watershed boundary) and Jefferson (10% inside the Watershed Boundary).

Sullivan County

	Septic Repair	Stormwater	Total
Town of Fallsburg	3	0	3
Town of Liberty	No data	No data	
Town of Neversink	71	0	71
TOTAL, Sullivan County	74	0	74

Source: NYCDEP

In Sullivan County, the Town of Neversink (80% inside the Watershed boundary) had the most violations, followed by Fallsburg (2% inside the Watershed boundary).

Ulster County

	Septic Repair	Stormwater	Total
Town of Denning	22	0	22
Town of Hardenburg	8	0	8
Town of Hurley	28	0	28

Town of Kingston	No data	No data	
Town of Marbletown	No data	No data	
Town of Olive	114	2	116
Town of Rochester	No data	No data	
Town of Shandaken	159	1	160
Town of Wawarsing	6	0	6
Town of Woodstock	75	0	75
TOTAL, Ulster County	**412**	**3**	**415**

Source: NYCDEP

In Ulster County, the Town of Shandaken (100% inside the Watershed boundary) had the most violations, followed by Olive (70% inside the Watershed boundary), and Woodstock (50% inside the Watershed).

Summary

A summary of all violations based on groupings (Majority in Watershed, Substantially in Watershed… etc.) from 2015-2024 is provided below.

	Septic Repair	Stormwater	Total	Number of Communities in this group	Estimated Population in this Group
Majority in Watershed	862	20	882	14	24,373
Substantially in Watershed	341	3	344	7	14,641
Moderately in Watershed	158	2	160	6	16,723
Marginally in Watershed	24	0	24	11	85,600

Total Violations in Watershed	1385	25	1410		

Source: NYCDEP (violations), US Census 2023 (estimated population – aggregated towns in group)

Key Observations:

- Septic repair violations are significantly more prevalent than stormwater violations; 98% of all violations are septic repair while 2% are stormwater violations.
- The Watershed had 1,410 violations over 10 years, an average of 141 violations per year with the vast majority of those violations related to the voluntary repair of septic systems receiving reimbursement under the CWC Septic Program that exhibit some level of failure. A roughly equivalent annual number of septic systems categorized as "likely to fail" are also repaired under the CWC Septic Program but are not tracked by DEP as violations.
- The town that received the largest number of violations in each county in the Watershed was in the "Majority in the Watershed" group.
- Delaware County had the most violations (699) followed by Ulster (415), and then Greene (245).
- NYCDEP appears to focus more attention on enforcement in communities included in the Majority in the Watershed, which makes sense because these communities have a larger influence on the city's water quality and are more so in NYCDEP's jurisdiction.

Evaluation of State Agency Violations

Data was requested from NYSDEC for the past 10 years and we were directed to the Environmental Protection Agency's (EPA's) Enforcement and Compliance History Online (ECHO) Database for the years 2023-2025.

Key Observations:

- Watershed counties average: 51.0 total violations per county over the three-year period (2023-2025), or approximately 17 violations per county per year.
- Non-Watershed counties average: 49.8 total violations per county over the three-year period (2023-2025), or approximately 16.6 violations per county per year.
- Ratio: 1.02x (essentially no difference)

Conclusion: Watershed counties received the same amount of state agency enforcement as non-Watershed counties. Notably, state agency violations in Watershed counties are roughly equivalent to the number of formal Notices of Violation (NOVs) issued by DEP (noted at the beginning of this section). However, when factoring in voluntary septic system repairs reimbursed through the CWC Septic Program, state agency violations are significantly lower than DEP violations—representing between one-third and one-tenth the number of DEP violations documented in Watershed communities, demonstrating that DEP enforcement activity, inclusive of voluntary repairs of septic systems exhibiting some level of failure, substantially exceeds state agency enforcement activity in the Watershed.

Wastewater Rate Evaluation

The CGR Consulting Team attempted to collect data on wastewater rate charges to determine if significant differences exist in Watershed vs non-Watershed communities.

We reached out to all Watershed towns as well as Control towns (acknowledging that not all of the towns utilize public wastewater systems). We received responses from 5 of the 48 communities inside the Watershed, and 1 response out of the 11 towns included in the Control group.

Inside Watershed - Towns/Villages/Hamlets

Inside the Watershed, some communities are served by sewer districts that are owned, operated, and maintained by the NYCDEP, and these communities are not charged by NYCDEP; however it was reported by NYCDEP that the Town of Shandaken may collect annual sewer use charges within the sewer district served by the Pine Hill WRRF (owned by NYCDEP). Shandaken did not respond to our request for information to verify or characterize the cost of wastewater service.

Below is a summary of information that was received from communities inside the Watershed.

Roxbury (Delaware County, 100% inside of Watershed boundary):

- Roxbury Sewer District: Customers in this district live in the hamlet of Roxbury and are billed **annually** on the January Town/County tax bill. No data was provided on the cost/fees for service.
- Denver Sewer District: Customers in this district live in the Roxbury Run Village Townhouse complex and are billed annually on the January Town/County tax bill. No data was provided on the cost/fees for service.
- Grand Gorge Sewer District: This is a NYCDEP owned and operated facility. Customers in this district live in the hamlet of Grand Gorge. There is no bill charged by NYCDEP, and it appears that the Town of Roxbury does not collect or bill fees.

Town of Middletown (Delaware County, 100% inside of Watershed boundary):

- New Kingston Sewer District: Customers in this district live in the hamlet of New Kingston and are billed $100 annually.
- Halcottsville Sewer District: Customers in this district live in the hamlet of Halcottsville and are billed $100 annually.
- Margaretville WRRF: This is a NYCDEP owned and operated facility. Customers served by this facility in Middletown live in the Village of Margaretville. There is no bill charged by NYCDEP, and it appears that the Village of Margaretville does not collect or bill fees.

Village of Deposit (Delaware County, located within the Town of Deposit, 10% inside of Watershed boundary):[50]

- Sewer fees are collected quarterly by the Village and the rates from the last 3 years have been $172.06, $176.23, and $176.25. These fees cover both debt and operation and maintenance of the system.
- The Village does not have a formal "sewer district" in the legal sense of the word, but the system serves the small Village of 650 customers and a half dozen users outside of the Village.

Town of Olive (Ulster County, 70% inside of Watershed boundary):

- Customers served by the wastewater system live in the hamlet of Boiceville. The sewer district was established in 2012 and has approximately 100 participants including the local high school. Below is a rate schedule (annual fees) for residential participants (local businesses pay differently according to usage – information was not received for these businesses):

Year	Amount (Annual)
2014	$102.30
2015	$104.65
2016	$106.43
2017	$107.50
2018	$108.68
2019	$109.98
2020	$112.07
2021	$114.42
2022	$116.48
2023	$119.51
2024	$125.01

[50] Although the Village of Deposit is partially located inside the Watershed, the system itself is not, and so the regulations for this system differ from other systems within the Watershed.

2025	$132.01

Source: Town of Olive

Village of Hobart (Delaware County, located within the Town of Stamford, 100% inside of Watershed boundary):

- The Village of Hobart bills customers quarterly. Current rate information is summarized below:
  - $ 80.00 minimum for the 1st. 8,000 gallons of usage
  - $ 3.95 for every 1,000 gallons from 8,001-15,000 gallons
  - $ 5.00 for every 1,000 gallons from 15,001- 50,000 gallons
  - $ 6.95 for every 1,000 gallons from 50,001 - 100,000 gallons
  - $ 8.00 for every 1,000 gallons from 100,001 gallons

Outside of Watershed (Control) - Towns

Below is a summary of information that was received from communities outside the Watershed from our sample of Control towns.

Town of Esperance (Schoharie County):

- As of January 1, 2025, the current sewer rate for customers was $200, billed quarterly.
- If the sewer bill is not paid in the quarter, a late fee is assessed.
- Before January 1, 2025 (for several quarters prior) the sewer rate was $170, billed quarterly.

Although only 1 community responded to the request for information, additional information was found via online research for 4 additional communities.

Village of Athens (Greene County, located within the Town of Athens):

- In 2021, the Village of Athens charged $129/quarter to properties located inside the Village and $161.50/quarter for properties located outside the Village. An allocation of 15,000 gallons was given per quarter to each property, with an additional fee of $3.00/1000 gallons over the 15,000 gallons.

Town of Rockland (Sullivan County):

- In 2025, the Roscoe Sewer district charged $146.00/quarter for an allocated use of up to 9,000 gallons, with an additional fee of $11/1000 gallons over the 9,000 gallons.

Town of Saugerties (Ulster County):

- In 2025, all sewer districts in the Town charged $52.35/quarter for an allocated use of up to 5,000 gallons, with an additional fee of $10.47/1,000 gallons over the 5,000 gallons.

Comparison

- **Inside the Watershed:**
  - The systems that municipalities (who responded to the CGR Consulting Team) used for billing users varies:
    - Flat sewer rate (billed for being connected to the system) - billed quarterly or annually.
    - Based on usage - billed quarterly
  - With the exception of the Village of Deposit, whose system lays outside the Watershed, the average annual cost in the Watershed ranged from $0 to $320/year per household.
- **Outside the Watershed:**
  - Esperance (the only community that responded to the CGR Consulting Team's request) bills customers at a flat rate of $200/household per quarter ($800/year if paid on time with no late fees).
  - For municipalities that bill according to a usage schedule (similar to the Village of Hobart), costs ranged from a low of $516/year for typical usage in the Village of Athens (if paid on time with no late fees) to a high of $848/year for typical usage in the Town of Rockland (if paid on time with no late fees).

Conclusion: Based on available but limited data, it appears that billing approaches and amounts vary in both groups (inside and outside Watershed). The range inside the Watershed (with the Village of Deposit removed – see footnote above) was $0/year - $320/year per household while the range outside the Watershed was $209/year - $850/year per household.

Chapter 3: Evaluation of Benefits to Watershed Counties and Towns

This phase consisted of collecting and analyzing data from a variety of agencies as well as drawing on interviews and focus groups conducted in Chapters 1 and 2 to analyze and draw conclusions of benefits of being inside the Watershed versus being outside the Watershed.

Funding and Employee Evaluation

Community vitality can be bolstered through state and other funding sources. To assess funding levels available to Watershed and non-Watershed communities, the CGR Consulting Team gathered and analyzed data from four sources:

- Watershed Partnership Program Funds provided by New York City Department of Environmental Protection (NYCDEP) to support water quality protection and the economic viability of Watershed communities. Administered primarily through the Catskill Watershed

Corporation (CWC) and the Watershed Agricultural Council (WAC), the funds support a wide range of initiatives including agricultural improvements, septic system upgrades, stream buffer protection, and community/economic development.

- State funding provided through Department of Environmental Conservation (NYSDEC), Empire State Development (ESD), and Environmental Facilities Corporation (EFC). DEC and EFC grants tend to focus on water quality improvement projects and infrastructure, while ESD grants address a wider range of community development goals including economic development, downtown revitalization and tourism.

The CGR Consulting Team requested data from all agencies but did not receive complete responses from each, so we supplemented what we received with online research and data extraction. The Watershed Agricultural Council (WAC) data is presented separately since it was not broken down by Town or County. Due to compiling data from various sources, the dataset might not be fully complete.

Group	Funding provided 2014-2024 (in thousands of dollars)					
	DEC Grants	CWC Funding	ESD Grants	EFC Grants	Total	Avg. Per Comm.
Majority (14)	$2,650	$85,500	$10,800	$6,300	$105,200	$7,500
Substantially (7)	$163	$50,500	$0	$0	$50,700	$7,200
Moderately (6)	$750	$8,700	$0	$0	$9,500	$1,600
Marginally (11)	$13,500	$10,600	$21,600	$11,900	$57,600	$5,200
Control (11)	$1,000	$0	$0	$8,500	$9,500	$864
Total by Source	**$18,063**	**$155,300**	**$32,400**	**$26,700**	**$232,500**	

Source: Table created by CGR Consulting Team utilizing data from CWC, DEC, ESD, and EFC

Over the last 10 years, communities with the most land in the Watershed received significantly more funding than those with less or no land, largely because of the CWC funding that is only available to communities in the Watershed. They received 5 times as much as towns Moderately in the Watershed and more than 7 times as much as Control towns.

However, towns Marginally in the Watershed received almost as much funding as Majority or Substantially in Watershed towns, with grants coming from all of the agencies included in the analysis. They were the most balanced town group across the funding sources.

Other key observations include:

- Only 2 out of 41 Watershed towns received no funding from any of the named agencies, compared to 6 out of 11 Control towns.
- CWC funds are the primary financial driver, providing 67% of all the funding analyzed.
- Being within the Watershed did not appear to negatively affect a community's ability to secure competitive grants from state agencies. Watershed communities were successful in accessing these funds overall, particularly the Marginally in Watershed group that received the most funding from DEC and EFC.
- Financial support is not evenly distributed. The top five towns (in terms of total funding received) received disproportionately large amounts of funding, and three of the top five were towns Majority in the Watershed and, primarily supported by CWC (Middletown, Shandaken, Olive). At the county level, while total CWC funding aligns with the number of towns in the Watershed, the *straight average funding per town* suggests that communities in Ulster and Greene Counties receive the most individual CWC support.
- Awards from DEC and ESD were often characterized by a small number of very large grants. For example, the high funding levels received by both the Marginally in the Watershed group (DEC: $13.5 million) and the Control group (DEC: $1 million) were due to a single or a few large awards.

Watershed Agricultural Council

The Watershed Agricultural Council (WAC) works with farm and forest landowners in the Watershed to protect water quality for New York City's water supply through programs like Whole Farms Plans and Forest Management Plans. It promotes the economic viability of local agriculture and forestry by fostering public-private partnerships and initiatives like the "Pure Catskills" buy local campaign. WAC uses a science-based approach and conservation easements to support sustainable working landscapes, ensuring the economic health of the region while safeguarding the water supply for millions of downstream residents

As WAC does not track funding data on a Town or County[51] basis (and it pays farm and forest landowners rather than municipalities), the following table summarizes the annual funding received via NYCDEP contract revenue (which makes up approximately 95% of WAC's annual funding) between 2018 and 2024.

[51] Although WAC has this data (i.e., addresses of landowners) it is not something that the agency tracks systematically by town/county or readily aggregate as outputs. Therefore, this data was not provided.

Year	Annual Funding
2018	$14,180,127
2019	$17,503,330
2020	$17,161,549
2021	$13,211,190
2022	$10,507,160
2023	$12,600,803
2024	$17,160,299
Total	**$102,324,458**

Source: WAC Annual Reports, 2018-2024

Funding decreased precipitously after 2020 but rebounded to reach near its peak in 2024.

Employment

Good paying employment opportunities in the Watershed are important to community vitality, and the Watershed itself requires skilled workers to be involved in its maintenance, through CWC or WAC programming, NYCDEP oversight/enforcement of water quality, or the work by external contractors. It is also important to understand to what extent Watershed workers live in Watershed communities.

We requested employment data from the NYCDEP, CWC, and WAC to characterize the benefit of employment to the region.

CWC

The CWC employed a total of 27 full-time employees in 2025, of which 25 (93%) lived inside the Watershed. Additionally, through CWC funded programs, individuals and businesses contract with the CWC to perform work throughout the Watershed.

NYCDEP

The NYC DEP employed approximately 500 people in 2025 in the Catskills region, with a total payroll of $47.3 million annually. The average salary of an employee living in the Catskills region was $95,000. The DEP additionally funds staff positions at county soil and water conservation districts (SWCDs), Cornell Cooperative Extension (CCE), the Catskill Center, SUNY Ulster, SUNY Delhi, US Geological Survey (USGS), and various consultants/private firms.

Watershed Agricultural Council

In 2025, WAC employed a total of 74 people, with 62 direct reports and 12 subcontracted staff members. Of this, 56% (41) of the employees live within the Watershed.

Summary

In summary, the CGR Consulting Team estimates that in 2025, more than 700 people were directly employed by the DEP, CWC, and WAC collectively to support the mission of protecting water quality and community vitality in the Watershed; however, the true economic and community impact of people working in the Watershed employed as contractors/subcontractors and funded via DEP, CWC, and WAC programming is significantly higher with employees that are indirectly hired by these agencies (e.g., through program contracts). Specific data on the numbers of contractors and employees indirectly employed by funding from DEP, CWC, and WAC was not received but this should be considered for future study to assess the level of economic impact through jobs these groups provide.

Recreation and Access to Natural Resources in the Watershed

As noted in the 2023 Community Vitality Report (Sternberg et. Al., University of Buffalo, pg. 71), approximately 40% of the Watershed has been protected for land conservation purposes through a combination of City, State, and municipal land protection efforts. Specifically, NYCDEP has protected approximately 20% of the Watershed lands, the State has protected an additional 20%, and municipalities have protected less than 1%. According to the 2023 report, NYCDEP had acquired (at that time) approximately 154,000 acres since 1997. This presents significant opportunities for expanding public recreational access while maintaining water quality protection. As the report also notes, “Without a doubt, New York City activities in the Watershed have preserved large segments of the territory as a permanent natural resource.”

A map of recreational assets for the Watershed is provided at the end of this section.

Recreational Lands Analysis: Key Findings

Comprehensive spatial analysis of recreational facilities and land use in the Watershed for NYCDEP lands reveals the following:

- Approximately 7.9% of land within the Watershed is used for recreational activities.
- There are 95 miles of recreational trails in the Watershed across 12 trail systems.
- There are 151 fishing access points in the Watershed and 19 boat launch sites.
- The 351 recreation units in the Watershed cover more than 81,242 acres of land.
- Most recreational lands are concentrated around waterways, though there are several recreational trails located in mountainous areas.

Recreational Lands Analysis Methodology

The data for this analysis was limited. Fishing Reservoirs, Recreation Units[52], NYC DEP Recreational Boat Launch Sites, NYC DEP Fishing Access Points, and Recreation Trails, all from NYC Environmental Protection DEP (which only contains data within the Watershed) were all included in the evaluation. The CGR Consulting Team was unable to locate the same type of data from other sources outside the Watershed.

Infrastructure Disparity and Development Opportunity

The 2020 Greater Catskill Region Comprehensive Recreation Plan documents substantial differences in recreational infrastructure between NYSDEC and NYCDEP land holdings in the Watershed. NYSDEC manages 500+ miles of hiking trails in the Catskill Forest Preserve, which is constitutionally protected as "forever wild" and managed explicitly for public recreation and resource protection. In contrast, NYCDEP maintains 95 miles of recreational trails across 12 trail systems on lands managed primarily for water quality protection. This difference reflects the distinct mandates of each agency—NYSDEC prioritizes recreational access as a core mission, while NYCDEP balances limited recreational access with water quality protection priorities. From a community vitality perspective, however, residents experience less recreational infrastructure on DEP-managed lands compared to state Forest Preserve lands, regardless of the programmatic reasons for this difference

While DEP manages 351 recreation units covering approximately 81,242 acres (7.9% of Watershed land area), 151 fishing access points, and 19 boat launch sites, most DEP-managed lands lack developed trail infrastructure. When asked about recreational opportunities in the Watershed, several stakeholders indicated that they believed there was more opportunity for recreational development and how this could serve as an economic development opportunity.

DEP notes that while certain activities are restricted on its lands to protect water quality, the majority are open for recreational uses including boating, hiking and fishing. The difference in recreational infrastructure between DEP-managed lands (primarily managed for water quality protection) and NYSDEC Forest Preserve lands (constitutionally mandated for public recreation) reflects different agency mandates rather than categorical restriction of access.

Regional Economic Context and Visitor Growth

The 2020 Recreation Plan quantifies recreation's economic significance: the outdoor recreation economy generates $1.6+ billion annually in NY's 19th Congressional District, with recreation supporting 15% of the regional economy. The arts, entertainment, and recreation sectors alone provided 2,188 jobs in the four-county area (Delaware, Greene, Sullivan, and part of Ulster County). While the 19th Congressional District boundaries do not perfectly align

[52] Area of land and water owned and managed by the NYC DEP for controlled public recreational access. These units are located primarily within the Watershed properties that supply the City's drinking water. Activities in these areas can include fishing, hiking, hunting, and boating.

with the five Watershed counties, this represents the best available regional economic data for recreational impacts.

Most dramatically, 12+ million visitors came to the Catskill Region in 2021 - more than doubling from 2018. This explosive growth created both opportunity and pressure. Trail registration data shows consistent increases at regional trail sites, with some locations experiencing thousands of additional annual sign-ins. Yet survey data reveals 62-96% of trail users are local residents, demonstrating recreation's crucial role in quality of life beyond tourism.

DEP's institutional perspective shows growing recognition of recreation as an "ecosystem service" alongside water quality protection. Staff described protected lands as "safeguarding water quality and other ecosystem services (biodiversity, recreation etc)" and emphasize that recreational services should be "running smoothly and efficiently and [be] responsive, accountable, transparent and adaptive in addressing community needs and concerns."

Cold Water Releases and Downstream Fishery Benefits

NYCDEP reservoir operations provide significant economic benefits to downstream communities through cold water releases that create and sustain world-class trout fisheries. These tailwater fisheries below reservoir dams—maintained through controlled releases of cold, oxygen-rich water—support year-round fishing opportunities that attract anglers from across the region and generate substantial economic activity. The Esopus Creek below Ashokan Reservoir, the Delaware River below Cannonsville Reservoir, and other tailwater fisheries have gained national recognition among fly-fishing communities. These fisheries support:

- Tourism and Recreation: Anglers traveling to the region for fishing opportunities
- Local Business Support: Fly shops, guide services, lodging, restaurants, and other businesses serving the fishing community
- Property Values: Proximity to quality fishing access enhancing real estate appeal
- Year-Round Economic Activity: Unlike seasonal recreational activities, quality trout fishing occurs throughout the year

While the fisheries themselves are located downstream of the dams (and thus technically below the Watershed boundary in some cases), the economic benefits extend throughout the Watershed region as visitors travel through Watershed communities to access fishing locations, utilize regional services, and contribute to the broader recreational economy.

Demonstrated Success: The Ashokan Rail Trail Model

DEP staff specifically cite that "the Ashokan Rail Trail has been a successful collaborative project with community benefits," proof that significant recreation infrastructure can be developed on Watershed lands while maintaining water quality protection. This 11.5-mile rail trail along the Ashokan Reservoir validates stakeholder recommendations: recreation infrastructure intentionally designed to bring visitors to communities creates local business opportunities while serving as a regional attraction.

The 2020 Recreation Plan identifies the Ashokan Rail Trail as a model for "trail towns" (Andes, Margaretville, Fleischmanns, Phoenicia and Boiceville) seeking economic linkages between recreation and local businesses. The trail demonstrates that recreation creates Watershed stewards through education and "Leave No Trace" principles that directly benefit water quality - turning recreation from potential threat into protection tool. Unlike passive land preservation, this active recreation management creates measurable community benefit while maintaining environmental protection - precisely the dual-purpose approach stakeholders across all sectors advocated for.

Institutional Evolution: Examples of Collaborative Governance

The Watershed's collaborative governance model extends across multiple institutions, including the creation of WAC and CWC themselves as community-responsive organizations.

Within DEP's recreation management specifically, the evolution from the Streamside Acquisition Program (SAP) to the Collaborative Streamside Acquisition Program (CSAP) demonstrates institutional adaptation toward community-responsive management. CSAP articulates dual goals explicitly balancing environmental and community objectives:

1. "Enhance water quality protection through long-term stream buffer establishment"

2. "Address community needs for long-term community sustainability and climate resiliency"

The 2022 Catskill Advisory Group (CAG) Final Report established important local control mechanisms: "Future CSAP acquisitions will require formal support and approval from each town where a property is located, as well as from a Collaborative Project Working Group." This community approval requirement represents fundamental governance change from top-down land acquisition to collaborative planning - a model directly applicable to recreation infrastructure development.

The 2022 CAG report reinforces this direction, recommending adoption of the Visitor Use Management Framework (VUMF) as the "gold standard" for data-driven recreation management. VUMF, used by all five federal land management agencies, provides legally defensible decision-making through baseline resource monitoring, visitor experience surveys, carrying capacity determinations, and adaptive management - precisely the evidence-based approach DEP emphasizes.

Recreation's Dual Role and Core Tensions

Stakeholders participating in focus groups (as well as through previous reports) consistently identified recreation serving two purposes:

- **Quality of Life for Residents:** The Recreation Plan documents that local residents comprise 62-96% of trail users, demonstrating recreation as fundamental community infrastructure rather than purely tourism amenity. Stakeholders advocated for the "play-to-stay" economic development model: "build a place people want to play, then they will stay, find employment, and be kept there." DEP staff validated this in a focus group, defining

community vitality when asked as "the physical, mental, and economic well-being of community members" with recreation providing direct quality of life benefits.

- **Tourism-Based Economic Development:** DEC staff members discussed their success with recreation management in a focus group: "Where we've done a good job in protecting land and opening to the public…those communities have seen economic development through ecotourism." When asking stakeholders involved in tourism in in the Watershed and outside of the Watershed, this idea was reiterated and reframed: "Tourism is not just about attracting visitors—it's a gateway to residency, economic development, and community pride."

However, significant concerns emerged about tourism-driven displacement. Multiple town supervisors reported in focus groups that they had experienced an increase of 60-70% second home ownership, housing inflation pricing out locals, and seasonal business fragility with many establishments operating only 6-9 months annually (as the demand was only there during these times).

Critical Gaps and Capacity Constraints

DEP staff themselves identified that current metrics for recreation are inadequate, recommending that "for recreation, in addition to the metric for the number of access points per public access area, there should also be a metric for the total area of lands and waters available for public access areas" through feedback consultation in developing this report.

The 2020 Recreation Plan and 2022 CAG Report identify systematic data collection as critical priority, recommending:

- Trail counter installation at all major Watershed trailheads (automated counting systems)
- Economic impact studies using visitor spending surveys ($30-100 per visitor typical range)
- Visitor Use Management Framework implementation for baseline monitoring and adaptive management
- User demographics and origin data through parking reservation systems and intercept surveys

Both reports emphasize that recreation is currently "undercounted and undervalued due to lack of systematic data collection" despite generating documented economic benefits.

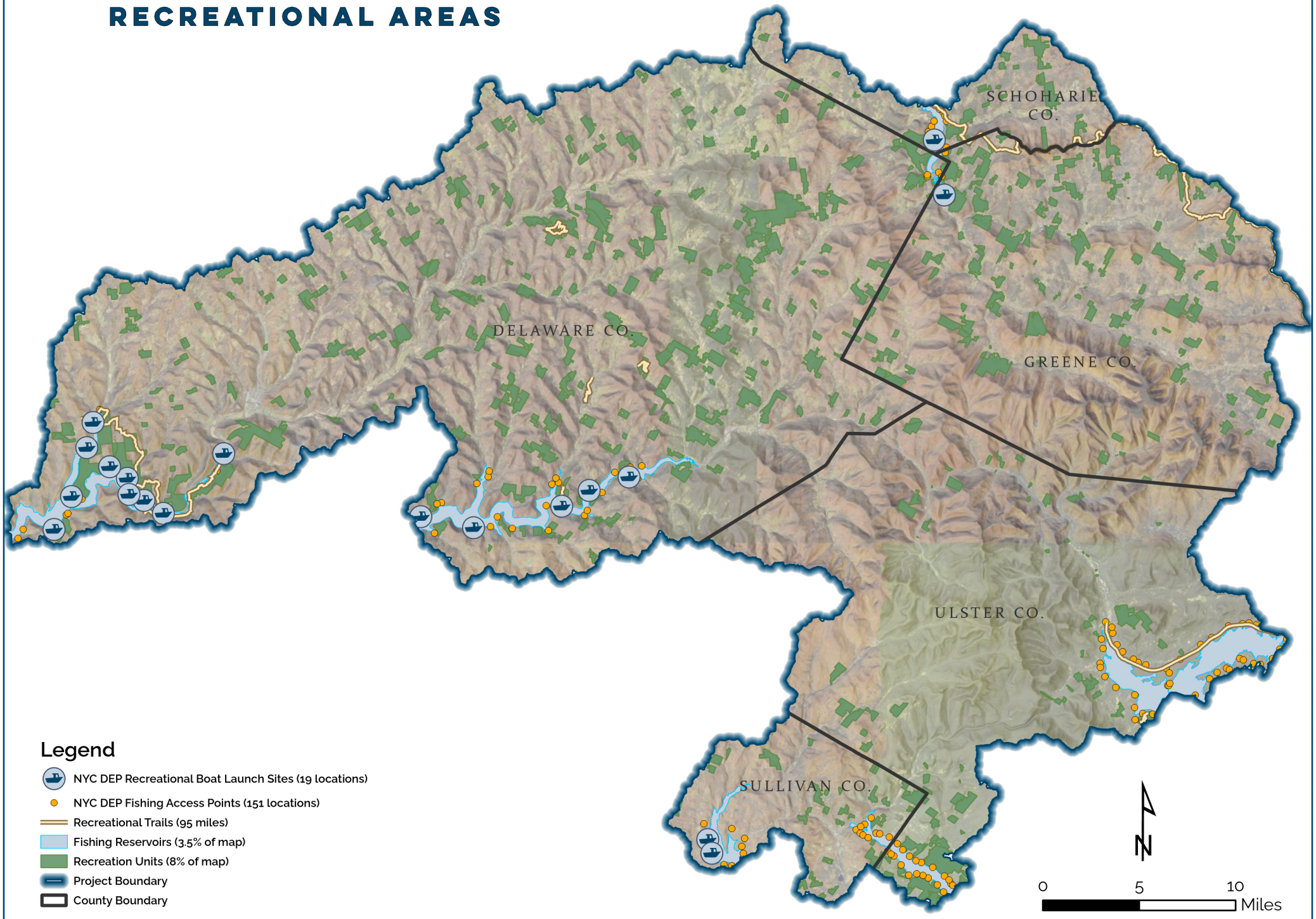
Further, NYSDEC indicated that there are only 4 land managers for the entire Catskill Park, with trail work costing 8.5x more through private contracts ($17M) versus state staff ($2M for equivalent work). It was also noted that staff housing unaffordability forces DEC employees to live outside the region in more affordable areas, undermining local knowledge and ability to be present.

DEP staff recognize this institutional challenge as well, with one staff member noting that "The portfolio of lands that have been acquired come with stewardship obligations, staffing, resources, policies, and programs to support that require evaluation and augmentation."

Protected lands require active management resources to deliver community benefit, not just preservation.

Stakeholders across sectors identified seasonal business fragility as a critical challenge and noted a puzzling disconnect: despite readily available, unused wastewater capacity in denser Watershed areas, economic activity remains limited, suggesting unidentified barriers to business investment. Recreation infrastructure could potentially activate this unused capacity by driving visitor traffic to areas with development potential.

RECREATIONAL AREAS



Agricultural Benefits and Opportunities in the Watershed

Agriculture has long formed the economic and cultural backbone of the Watershed, shaping the landscape and community identity across Delaware, Greene, Schoharie, Sullivan, and Ulster counties. The Watershed Agricultural Council's (WAC) more than three-decade partnership with farmers demonstrates how environmental protection and agricultural viability can mutually reinforce one another.

This section examines agriculture's historical role, current conditions, WAC's transformative work, and pathways forward for documenting agricultural opportunities in the Watershed.

The Historical Importance of Agriculture in the Watershed

Agriculture has been a mainstay of the Watershed's economy for generations, particularly in Delaware County. For over a century, family-operated dairy farms, beef cattle operations, and hay production defined the economic vitality and cultural character of Watershed communities. These working landscapes provided more than agricultural products—they sustained local economies, maintained open spaces, and created the environmental conditions that made the Watershed suitable for New York City's water supply.

The traditional agricultural economy centered on family farms passed through generations, creating deep community roots and institutional knowledge about sustainable land management. Dairy farming dominated, with operations ranging from modest family farms to larger commercial enterprises. The integration of cropland, pastureland, and woodland created a diverse agricultural mosaic supporting both economic productivity and ecological health.

However, Watershed agriculture has long faced challenges—difficult terrain, climate constraints, distance from markets, commodity price fluctuations, and increasing environmental regulations. These pressures intensified throughout the late 20th century as dairy industry consolidation and development pressures from second-home buyers mounted. The establishment of NYC's Watershed protection regime in the 1990s added new uncertainty about farming's future under comprehensive environmental oversight.

Current State of Agriculture in the Watershed

Data reveals both concerning trends and emerging stabilization. Between 2002 and 2017, Delaware County experienced sharp agricultural decline: farm numbers dropped 13.4% (788

to 689 operations) while total farm acreage plummeted 26.8%[53] (191,537 to 140,225 acres)—significantly exceeding New York State's overall 10.9% farmland loss.

The 2017[54] Census documented Delaware County's agricultural economy: 689 farms across 140,225 acres, generating $45.7 million in sales—71% from livestock and dairy ($25M from cow's milk alone, $6.1M from beef cattle), 21% from crops. Across the five Watershed Counties, approximately 3.14 million total acres contain roughly 399,000 acres of farmland (13 percent of land area), with total agricultural product sales of $298.3 million and estimated farm real estate value exceeding $4.4 million.

A Critical Reversal[55]: However, as discussed earlier in this report in our analysis of agricultural lands, post-2020 data suggests potential stabilization. Pre-2020, the Watershed counties had approximately 649,899 acres in designated Agricultural Districts, while Control counties recorded about 697,074 acres. Post-2020, the Watershed counties increased to 658,567 acres (an increase of 8,668 acres, or 21 percent of total land), while Control counties declined to approximately 681,090 acres (a loss of nearly 16,000 acres).

Notably, agricultural land in Watershed counties commands significantly higher value than outside the Watershed. When examining market value across all county land, Control counties average $359 per acre compared to $341 per acre in Watershed counties. However, when focusing specifically on farmland, the picture reverses dramatically: market value of agricultural products averages $3,831 per acre of farmland in Watershed counties versus $1,047 in Control counties. Land and building values show similar premiums: $72.67 per farmland acre in Watershed counties versus $22.26 in Control counties. This value differential suggests Watershed agriculture benefits from comprehensive support systems rather than being depressed by regulatory constraints.

Delaware County farmland composition reflects regional adaptation: 48 percent cropland, 15 percent pasture, 31 percent woodland, 6 percent other. Despite these strengths, challenges persist: farmer aging and succession barriers, development pressure, climate volatility, and dairy supply chain consolidation. Among Watershed counties, Greene County demonstrates particularly strong agricultural performance with $28.23 per acre of farmland in land and building values, while Ulster County leads in agricultural market value at $85 per acre.

Further analysis of designated Agricultural Districts reinforces this value premium. Within Agricultural Districts specifically—land set aside for optimal agricultural production—Watershed counties generate $1,634 in agricultural products per district acre compared to $1,468 in Control counties (an 11% premium). The estimated market value of land and

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[53] The 2023 Community Vitality in the Catskill Watershed Report (Sternberg et. Al., University of Buffalo, Table 4.4, p. 38) states this decline as 30.9%; however, recalculation based on the acreage figures provided in the same table (191,537 acres in 2002 declining to 140,225 acres in 2017, a loss of 51,312 acres) yields 26.8%.
[54] **Source:** US Census of Agriculture, Historical Highlights: 2017 and Earlier Census Years; 2017 Census of Agriculture County Profile for Delaware County, NY; via https://agcensus.library.cornell.edu/
[55] **Source:** See Chapter 1 of this report (agricultural statistics) for this information as well as additional quantitative information.

buildings per Agricultural District acre reaches $42 in Watershed counties versus just $11 in Control counties (a 282% premium), indicating that designated agricultural land in the Watershed counties is not only more productive but commands higher real estate values.

The Work and Benefits of the Watershed Agricultural Council

The Watershed Agricultural Council (WAC) was established in 1993 following recommendations from a 1990 Ad Hoc Task Force on Agriculture and New York City Watershed Regulations. WAC predates the 1997 Memorandum of Agreement and was created to address the challenge of balancing Watershed protection with agricultural viability through local farmer leadership. Over more than three decades, WAC has fundamentally transformed this relationship through comprehensive technical assistance and financial support

Core Services and Investment

WAC employs 74 staff (56% residing within the Watershed), bringing professional expertise and community connection to their work. Based on WAC's Annual Reports from 2015-2024, WAC invested approximately $147.8 million in Watershed protection programs:

- Agricultural Program: $80.6M (54%): BMPs, whole farm plans, technical assistance
  - Averaging $8.1 million annually.
- Conservation Easements: $24.0M (16%): Permanent farmland and forest protection
- Forestry Management: $14.2M (10%): Sustainable forest practices and planning
- Economic Viability & Outreach: $4.8M (3%): Farm business support and education
- Administrative Support: $19.5M (13%): Program delivery and oversight
- Other Programs: $4.7M (3%): Endowment contributions, donated services

The organization's suite of services includes:

- **Whole Farm Plans**: Comprehensive assessments identifying water quality risks, operational inefficiencies, and improvement opportunities. As of 2021, WAC developed 456 Whole Farm Plans covering 375 farms[56], with approximately 90 percent participation according to WAC sources interviewed—an exceptionally high rate reflecting farmer trust and program value.
- **Best Management Practices**: Through 2021, WAC implemented 7,909 BMPs at $67 million total investment[56] with recent years breaking implementation records. BMPs range from manure storage and barnyard improvements to stream stabilization, precision feeding systems, and nutrient management.

[56] **Source:** NYCDEP Filtration Avoidance Report, 2021

- **Conservation Easements**: Through a $24 million investment from 2015-2024, WAC holds 178 filed conservation easements (219 individual properties, with some being subdivisions) totaling approximately 31,500 acres across the Watershed, with Delaware County accounting for 186 parcels (27,197 acres). The majority of these easements (10 are Forest Conservation Easements) permanently protect farmland while providing farmers capital for investment, debt reduction, or succession planning. Critically, 83 percent of agricultural easement land remains in active farming[57].
- **Technical Assistance and Education**: Ongoing support in soil health management, cover cropping, rotational grazing, precision feed management, and emerging sustainable practices, connecting farmers with Cornell Cooperative Extension, Soil and Water Conservation Districts, and university researchers.

Documented Benefits

The impacts span environmental, economic, and social dimensions. Multiple farmers report WAC programs funded by NYCDEP prevented farm shutdowns during economically challenging periods. One representative commented: "I am absolutely going to keep farming for another 4-6 years" following BMP implementation.

Economic multiplier effects flow throughout the region. Every BMP project, conservation easement acquisition and forestry initiative employs local contractors, engineers, and suppliers. The $147.8 million invested over the past decade supported hundreds of construction projects, equipment purchases, and professional services.

Research partnerships with Columbia University and Cornell document tangible benefits: cover crops and improved rotations reduce fertilizer costs while improving water quality; enhanced barnyard facilities reduce veterinary expenses and increase livestock weight gain; precision feed management cuts costs and nutrient runoff simultaneously. These synergies validate WAC's integrated approach.

Conservation easements provide multiple benefits: removing development pressure from land valuation, enabling debt reduction and equipment investment, facilitating succession planning, and maintaining the critical mass of agricultural activity necessary for supporting agricultural service businesses.

Capturing Soft Costs and Intangibles

Beyond quantifiable benefits lie substantial intangible values that WAC provides to the Watershed community:

- **Community Stability and Social Capital**: WAC supports farmers' ability to remain on their land through financial assistance and technical support that reduces operational costs and addresses infrastructure needs. As documented in stakeholder interviews, multiple

[57] **Source:** 2023 Community Vitality in the Catskill Watershed Report – email with WAC, July 17, 2023

farmers reported that WAC programs prevented farm shutdowns during economically challenging periods. This preservation of working farms maintains not just acreage but community members, local knowledge, and civic infrastructure. Farm families volunteer with fire departments, serve on school boards, and maintain small-town social fabric. WAC's 74 employees represent dozens of middle-class professional jobs anchored in rural communities.

- **Knowledge and Technical Capacity Building**: Decades of work with hundreds of farms has built extraordinary institutional knowledge about sustainable agriculture in Catskills conditions. Farmers gain enhanced management skills, deeper understanding of soil health and nutrient cycling, and connections to broader expertise networks—capacity that enables better long-term decision-making and adaptation.
- **Landscape and Cultural Preservation**: Working farms maintain open pastoral landscapes defining the Watershed's' character. These landscapes attract tourism, support recreation, enhance regional property values, and embody continuity with regional history and identity. Multi-generational farm families, farmers' markets, and farm stands sustain a sense of place valued throughout the community.
- **Environmental Co-Benefits**: Beyond water quality protection, agricultural BMPs generate numerous co-benefits: riparian buffers improve aquatic habitat; cover crops sequester carbon and build soil organic matter; managed grazing enhances grassland bird habitat; maintained agricultural landscapes provide wildlife connectivity and ecosystem resilience.
- **Economic Resilience and Optionality**: Maintaining a viable agricultural sector preserves economic options for the Watershed's future. Protected agricultural land, skilled farmers, and functional infrastructure provide capacity for expanded food production should economic conditions shift—a value highlighted during the COVID-19 pandemic's focus on local food systems.

Water Quality Outcomes and Data Limitations

While the economic, social, and agricultural benefits of WAC programs are well-documented, establishing direct causal links between specific WAC interventions and measurable water quality improvements in the NYC water supply system presents methodological challenges. The Watershed is a complex system with multiple variables affecting water quality, including weather patterns, land use changes, seasonal variations, and the cumulative effects of numerous protection programs operating simultaneously, to name a few.

WAC's Best Management Practices are designed based on established scientific principles that reduce agricultural pollutant loading—such as nutrient runoff, sediment transport, and pathogen contamination. However, isolating the specific water quality contribution of WAC programs from the broader suite of Watershed protection measures (including DEP's land acquisition, stormwater management, wastewater treatment upgrades, and regulatory programs) requires long-term monitoring and sophisticated modeling that has not been comprehensively undertaken to date.

This data limitation does not diminish the value of WAC's programs, which provide documented agricultural viability benefits, comply with best available science for pollution

reduction, and contribute to the multi-layered watershed protection strategy that has allowed NYC to maintain its filtration avoidance determination. Future research linking specific agricultural BMPs to water quality outcomes at both farm and watershed scales would strengthen the evidence base for program effectiveness.

Market Effects of Agricultural Investment

The Watershed has received substantial agricultural investment—approximately $150 million through WAC programs (2015-2024) as part of over $400 million in cumulative DEP watershed agricultural funding since program inception. This study documents that Watershed county farmland commands significantly higher market values than Control county farmland ($3,831 vs. $1,047 per acre for agricultural products; $72.67 vs. $22.26 per acre for land and buildings).

The report interprets these higher values as evidence of agricultural program success—demonstrating that Watershed regulations have not suppressed agricultural land values and that comprehensive support systems enhance farm viability. However, this comparative analysis cannot definitively determine causation or identify potential unintended market effects.

Unanswered questions that merit further research include:

- Market Distortion Effects: Has the availability of substantial BMP funding (structural improvements, conservation easement payments, technical assistance) created artificial inflation in Watershed farmland values compared to market conditions in areas without similar support? If so, what are the implications for agricultural market dynamics?
- Succession Barriers: Do elevated farmland values—potentially driven by BMP investments, conservation easement programs, and NYC's presence as a major stakeholder—create affordability barriers for beginning farmers and complicate intergenerational farm transfers? The report documents that farmer aging and succession challenges exist in both Watershed and Control areas, but cannot isolate whether WAC investments have amplified or mitigated these challenges.
- New Entrant Access: Does the combination of higher land values and the requirement to participate in WAC programs (with associated environmental compliance expectations) create additional barriers to agricultural entry compared to Control counties? Or do WAC's technical assistance and financial support programs actually reduce barriers by making environmental compliance more affordable?
- Comparative Program Effects: Multiple federal and state agricultural support programs operate in both Watershed and Control counties (USDA-NRCS, FSA, state programs). This study does not quantify the incremental effect of DEP's $400 million investment versus baseline agricultural support available everywhere. Isolating DEP-specific effects would require econometric analysis controlling for all other agricultural support programs.
- Market Efficiency: Has long-term availability of cost-share funding for infrastructure improvements created dependencies or altered farm business decision-making in ways that reduce market efficiency? Or has it enabled farms to remain viable that would

otherwise have been forced out by economic pressures unrelated to watershed protection?

Conclusion: These questions cannot be answered with the comparative community vitality metrics analyzed in this study. Addressing them would require:

- Econometric analysis of farmland value determinants in Watershed vs. Control areas
- Longitudinal tracking of farm succession outcomes with and without WAC participation
- Survey research on beginning farmer perspectives on market entry barriers
- Analysis of farm business financial performance with different levels of BMP investment
- Comparison of agricultural land turnover rates and new entrant success rates

The higher farmland values observed in the Watershed counties reflect multiple factors (conservation easement programs, BMP investments, proximity to NYC markets, land use restrictions limiting development competition, natural land quality differences). Disentangling these effects to understand whether WAC investment creates net benefits or net market distortions requires research beyond the scope of this community vitality assessment.

Chapter 4: Conclusions and Recommendations

Chapter 4 outlines key conclusions and recommendations, based on both quantitative findings from the analyses in Chapters 1-3 as well as qualitative findings and 'on-the-ground' perspectives from interviews and focus groups with people all over the Watershed from different backgrounds.[58]

A key question is how community vitality is defined by the diverse group of people and organizations that live and work in the Watershed. Based on the interviews with all groups, we conclude that community vitality is a multifaceted concept defined primarily by a community's sustainability and affordability, supported by a blend of economic, social, environmental, and structural factors.

The stakeholders' cohesive definition is:

> ***Community vitality is the capacity for a community to sustain and evolve over time as a viable, year-round, and affordable home for its full-time residents.***

It is achieved through the integration of the following key elements:

- Sustainability and Resilience: The ability for the community to sustain itself and "exist and evolve" over time, rather than merely focusing on growth or expansion. It means being resilient to climate change and possessing the capacity to address current and future challenges.
- Population and Affordability: Maintaining a stable or growing year-round, full-time population. This requires being affordable so that residents can stay and are not displaced by rising costs, particularly making the community attractive to young families.
- Economy and Workforce: Having an economically vibrant, diverse, and sustainable business climate. This is contingent on a strong, available workforce/local talent, providing local job and business opportunities, and enabling local self-sufficiency so residents can meet their basic needs.
- Housing and Infrastructure: Providing affordable and appropriate housing stock, supported by modern, reliable infrastructure (including water, sewer, roads, and broadband).

[58] Stakeholder engagement methodology (and its limitations) can be found here at the front end of the report while the list of focus groups and interviews conducted as well as a sample protocol can be found in **Appendix C.**

- Quality of Life and Essential Services: Ensuring a high quality of life and a strong quality of place. This includes access to proximate essential services such as healthcare, daycare, EMS, and especially strong schools with stable enrollment.
- Community and Character: Fostering a strong sense of community and pride with an engaged and proud citizenry. This also includes preserving community character, such as maintaining farming communities and agricultural heritage.
- Environmental Integration: Achieving economic success and community well-being in a manner that is consistent with environmental health. It involves blending environmental protection with economic viability and maintaining local access to natural resources.

Key Questions and Recommendations

1. Do Watershed communities see a net positive or net negative based on the totality of variables associated with NYC regulations and programs?

At the outset of this project, and in conversations with several key stakeholders, the CGR Consulting Team offered that we would likely not be able to conclusively determine whether the Watershed communities experience a net positive or negative impact from being in the Watershed, for several reasons:

- Many external factors affect community vitality (i.e., socioeconomic shifts and policy decisions at the state/federal level, etc.). In fact, many of the challenges we heard about through stakeholder engagement and observed through data analysis in the Watershed are issues being faced by rural communities all over NYS and the US at large.
- Although the overarching definition of community vitality can be shared by different communities, assessing what is 'performing well' or 'performing poorly' for some metrics in a community can be extremely subjective and specific to each community. For example, if a community has historically relied on farming, a decrease in acres in an Agricultural District would have a larger impact than in a community that has not relied on farming as much.
- Weighing metrics and aspects of community vitality to produce an overall score or rating is extremely challenging. Is the poverty rate in a community as important or more important than the quality of soils or access to childcare? The concept of community vitality in general and as defined by stakeholders is too multi-faceted to allow for an aggregated rating that is meaningful.

Although a net negative or positive cannot be conclusively determined, our individual comparative analyses describe where there are differences between Watershed and Control communities. This provides a foundation for discussion and recommendations for targeted interventions.

In the following sections, we summarize observable differences in metrics of community vitality – metrics where Watershed communities appeared to be faring worse than Control communities and metrics where Watershed communities appeared to be faring better.

Metrics where there were no apparent differences are not presented here; these can be found in the individual analyses in Chapters 1, 2, and 3 of this report.[59]

Where Watershed Communities Appear to Fare Worse

- Between 2012 and 2022, Watershed counties had a higher establishment exit rate than Control counties for all but three of the 11 years tracked: 2016, 2018, and 2019.
- The Control counties had a higher total market value of agricultural products sold by acre than the Watershed counties: $341 per acre for Watershed counties versus $359 per acre for Control counties.
- In 2019-23, poverty rates were higher on average in towns in the Watershed (12%) versus those outside the Watershed (10%).
    - Additionally, Towns outside the Watershed experienced a 4-percentage point decrease in the percentage of people in poverty between 2009 and 2023 while all town groups in the Watershed (with the exception of towns Majority in the Watershed, which experienced a 2-percentage point decrease) leveled out to similar rates, meaning no change occurred in the percentage of people living in poverty over the course of 14 years.
- The Control counties had a higher total market value of agricultural products sold by acre than the Watershed counties: $341 per acre for Watershed counties versus $359 per acre for Control counties.
- Interestingly, both the aggregate of Watershed and Control counties had an average market value of land and buildings on farms of $1.54 per acre, indicating that - since the Control counties have more acres of farmland than Watershed counties – the overall total market value of farmland in Control counties is greater than that in Watershed counties, even though the price per acre is identical.
- While rates of children living in poverty for towns in the Watershed fluctuated between 2009 and 2023, towns outside the Watershed saw a steady decline in children living in poverty in the same time period. The child poverty rate in 2023 was lower in the towns outside the Watershed (8%) than in all groups of towns in the Watershed (next closest rate being towns Moderately in the Watershed at 11%).
- Disengagement among youth has intensified over time in both towns inside and outside the Watershed. However, the largest growth was seen in Watershed towns, especially those Majority and Substantially in the Watershed, when compared to towns outside the Watershed.
- Between 2013 and 2023, average rates of homeownership in Control counties have been slightly higher than those in Watershed counties, with dips in both county groups in 2018.

[59] The observations/findings listed in this section were lifted directly from these analyses; the reader can navigate to individual metric analyses for data, figures, and more details/context.

- Between 2013 and 2023, Watershed counties have consistently had higher average rates of housing burden among homeowners than Control counties, peaking in 2014 at 31.5% when Control counties averaged about 26%. Owning a home in Watershed counties is more expensive than in Control counties, and homeowners in the Watershed counties are spending more on their homes.
- Between 2013 and 2023, Watershed counties had higher average median rental prices than Control counties, except in 2014 and 2017.
- Trending with higher median rent payments, Watershed counties had higher rates of average cost burden among renters than in Control counties between 2013 and 2023.
    - However, in contrast to the cost burden on homeowners, average rates of cost burden among renters have been steadily declining in Watershed counties over the decade, indicating that either incomes among renters increased or rental rates increased at a slower pace than incomes in the area.
- Vacancy rates in Watershed counties were consistently higher than those in Control counties between 2013 and 2023.
    - However, since 2020, the vacancy rate in Watershed counties has trended toward the rate in Control counties, suggesting a higher demand for housing in the Watershed counties or an effort to rehabilitate prior vacant units to a habitable state.
- There was a persistent and significant disparity in the average healthcare provider availability, with the Control counties maintaining roughly three times as many active physicians as the Watershed counties.
- Watershed counties consistently experienced higher average overdose death rates than the Control counties from 2010 to 2022.
- 43.5% of all soils in the Watershed are rated as either fragile or moderately fragile. By comparison, 33.5% of soils in Control counties are classified as fragile or moderately fragile (i.e. fragile/moderately fragile soils have a higher chance of soil erosion).
    - However, fragile soils are mainly concentrated in Delaware County (both inside and outside the Watershed), indicating that fragile soil conditions have less to do with being located within the Watershed and more with local area slope conditions (i.e. steeper slopes = more fragile soils).
- Climate Impact: Watershed location dramatically increases disaster severity (larger amount of relief money provided). Despite having a similar frequency of disaster declarations (average of 5.3 vs. 5.0), Watershed counties received 15.6 times more per capita assistance on average than comparable Control counties ($3,093 vs. $198). Two factors likely contribute to this disparity: (1) Physical terrain: The Watershed's mountainous topography—with steep slopes causing rapid runoff and narrow valleys concentrating flood damage—may result in more severe disaster impacts when events occur, qualifying communities for higher levels of federal assistance; and (2) Enhanced application capacity: NYCDEP funding and technical support may enable Watershed municipalities to more effectively document damages, prepare comprehensive grant

applications, and navigate complex federal disaster assistance programs, resulting in higher recovery of available federal funds compared to Control counties (that have less institutional support). Further research would be needed to quantify the relative contribution of each factor, but both likely play a role in the observed assistance differential.

- There is very little land (less than 1% of total land in the Watershed) that is "developable" in the Watershed. This could pose challenges to new development. There is substantially more land (30% of total land in the Control counties) that is "developable" in the Control counties.
- **Development (refer to the Time and Cost Comparison for important caveats on the conclusions/findings presented here):**
  - The cost of development compliance with Watershed Regulations can reach 1.5-2X the cost of projects outside the Watershed.
    - Multiple layers of regulatory review, enhanced design standards, and interagency coordination requirements drive these increases, in addition to several other variables referenced in the body of the text.
  - Timeline uncertainty/inconsistency illustrated in the Time and Cost Comparison evaluation on Watershed communities causes additional burden by creating planning challenges for property owners and businesses. For seasonal businesses or projects with construction season constraints, even a two-month approval timeline can determine project feasibility. This can extend beyond construction season as NYCDEP may delay project approvals until sites are completely stabilized with 80% grass coverage.
  - DEP maintains average residential septic approval timelines below the regulatory 45-day standard from completeness to approval across all years. However, the timeline data shows both a significant increase in average timelines beginning in 2022 and a growing number of individual applications that exceed the 45-day standard.
  - Septic design fees are 25-150% higher inside the Watershed ($2,750-$5,000) compared to outside the Watershed ($1,500-$2,200).[60]
  - Beyond direct cost and time impacts, while the Watershed Regulations have evolved to provide flexibility for septic system alterations over the years – allowing for designs to meet current standards "to the extent possible" where site constraints may prevent full code compliance (since the 1990s for residential system repairs and since 2019 for commercial system alterations and modifications (Section 18-38(b)(4)) – this flexibility comes with requirements not present outside the Watershed. Property owners must demonstrate through engineering design that the proposed system, while not meeting full code, will not present a threat to public health or water quality. Design engineers have developed standard approaches for these non-conforming systems, and DEP

[60] As noted in the first bulleted key finding, the reader should reference the cost evaluation sections in the text for important caveats/limitations to the data.

reviews them through the same process as new systems (20-day completeness review).

  - Stakeholders indicated that while the regulatory flexibility exists on paper, the review process and burden of proof requirements still create uncertainty and procedural complexity compared to outside the Watershed, where alterations may receive minimal scrutiny.

- Comparing stormwater project timelines inside versus outside-the-Watershed is not comparable because NYSDEC administers a self-certification General Permit program with no technical review, while DEP conducts individual technical review of each SWPPP. These represent fundamentally different regulatory frameworks rather than different timelines for equivalent processes.

  - Although the comparison cannot be made because of this limitation, the fact that DEP conducts individual technical reviews of SWPPPs while this does not exist elsewhere emphasizes additional regulatory burden on the Watershed.

- Stormwater regulations create substantially higher financial burdens than septic requirements: Average stormwater design costs ($17,789-$35,578) are 3-7x higher than septic design costs ($2,750-$5,000). Average construction costs for SWPPPs exceed $185,000-$370,000, with property owners typically responsible for 50% of all costs. Over 2019-2024, property owners paid approximately $15+ million in unreimbursed stormwater compliance costs.

- **Violations:** Watershed counties received the same amount of state agency enforcement as non-Watershed counties. Notably, state agency violations in Watershed counties are roughly equivalent to the number of formal Notices of Violation (NOVs) issued by DEP. However, when factoring in voluntary septic system repairs reimbursed through the CWC Septic Program, state agency violations are significantly lower than DEP violations—representing between one-third and one-tenth the number of DEP violations documented in Watershed communities, demonstrating that DEP enforcement activity, inclusive of voluntary repairs of septic systems exhibiting some level of failure, substantially exceeds state agency enforcement activity in the Watershed.

Where Watershed Communities Appear to Fare Better

- Between 2010 and 2024, Control towns outside the Watershed had the largest average decrease in total population of all groups. This showcases that the Watershed towns fared better than the Control towns by retaining more population.
- Watershed counties had higher levels of establishment entry rates between 2012 and 2022, with new businesses in the Watershed hovering about 1-3 percentage points above Control counties.
- Overall, Watershed counties performed much better in terms of providing jobs that are at or above the livable minimum wage. Over 52% of jobs in Watershed counties pay above the minimum livable wage whereas under 41% of jobs in Control counties pay a livable wage.

- The Watershed counties had a higher total market value of agricultural products per acre of farmland than the Control counties: $3,831 per acre of farmland in Watershed counties versus $1,047 per acre of farmland in Control counties.
- The Watershed counties had a significantly higher estimated value of agricultural real estate than the Control counties: $72.67 in land and buildings on farms per acre of farmland versus $22.26 in land and buildings on farms per acre of farmland.
- In 2019-23, all towns in the Watershed, except for those Marginally in the Watershed, outperformed the towns outside the Watershed in terms of average education levels of people 25 and older.
- The median value of homes in Watershed counties was consistently higher than Control counties between 2013 and 2023.[61]
- Between 2013 and 2023, there were far more seasonal units in Watershed counties than in Control counties. This indicates that the Watershed counties are popular for second homeowners, vacationers, and short-term rentals.[62]
- In every year between 2013 and 2023, Watershed counties issued significantly more new building permits than Control counties. The value of these new permits varied over the decade, tracking with the total number of new permits issued. Watershed counties recorded consistently higher levels of valuation, reflecting an active construction market that provided a return on investment.
- In terms of permits by type of housing, Watershed counties had far more permits issued for new single-family homes than Control counties.
- Watershed counties had a 27% increase in TAV per capita from 2014 to 2024 compared to 21.1% in Control counties.
- Both Watershed and Control counties experienced a steady decline in average property crime rates from 2010-2024, though the Control counties consistently reported slightly higher rates (74 property crimes/10,000 residents in Watershed counties versus 81 property crimes/10,000 residents in Control counties).
- Watershed counties had on average higher firefighter-to-resident ratios than Control counties.
- In the Watershed, 79.5% of ground cover is either deciduous forest (61.5%), evergreen forest (3.5%) or mixed forest (14.5%). The high amount of forested ground cover indicates a very high quality of conservation areas in the Watershed.

[61] Higher median value homes could also have some negative implications in the Watershed counties. For example, locals or young people wishing to return home to the Watershed counties may be priced out of the market and be unable to afford the purchase of a home versus those that have higher incomes and can purchase second/seasonal homes.

[62] This could be viewed negatively, as most stakeholders interviewed referenced how the number of full-time residents has declined steadily, and these seasonal units can be viewed as being taken out of rotation for full-time residents.

- There is a limited presence of invasive species in the Watershed. Invasive species may be more present outside the Watershed in the Control counties primarily due to the comprehensive and proactive management strategies employed within the Watershed to prevent, detect, and control invasive species.[63]
- Based on the available but limited data, it appears that public wastewater utility rates showed that wastewater treatment was cheaper in the Watershed than outside the Watershed -- the range inside the Watershed (removing the Village of Deposit from the dataset) was $0/year - $320/year per household while the range outside the Watershed was $209/year - $850/year per household.
- Being in the Watershed affords communities the ability to access significant financial support.
    - Watershed town groups received between $1.6M and $7.5M on average per community (from the agencies/organizations highlighted in the funding evaluation section) while Control towns received $864,000 on average per community between 2014 and 2024.

Conclusions

- The most positive aspects of being in the Watershed revolved around environmental health and access to natural resources/recreation as well as financial support from CWC and the state agencies. Additionally, the Watershed Agricultural Council (WAC) has an impressive inventory, and it appears that its work has had a positive effect on both water quality and agriculture in the Watershed.
- The most negative impacts of being in the Watershed revolved around enforcement action/violations and regulatory constraints and process leading to some increases in cost and uncertainty.

Being in the Watershed cannot be boiled down to a net negative or positive for a community. However, we note that the NYCDEP and Watershed communities both have an interest in maintaining and enhancing vitality in Watershed communities. This benefits residents directly and helps the NYCDEP garner a local workforce, especially important as retirements accelerate in coming years.

2. What are the biggest variables contributing negatively to community vitality?

[63] Our analysis is limited to open-source data. Any detailed assessment—particularly regarding invasive species—would require on-the-ground field surveys to verify presence and extent. The Watershed has been (and still is subject) to more environmental regulation than the areas outside of it. A couple of additional sources supporting this claim are listed here: https://www.caryinstitute.org/science/research-projects/research-guide-catskills-region-new-york, https://www.nyc.gov/assets/dep/downloads/pdf/about/filtration-avoidance-determination/fad_4.8_invasive_species_strategy_03-22.pdf

Based on our evaluations and conversations with diverse stakeholders (refer to the Stakeholder Engagement section for greater details), the following were the most cited and biggest variables that are negatively affecting community vitality in the Watershed:

- As highlighted in the Developable Lands Analysis, there is limited available developable land. This could potentially lessen the avenues for regional economic development and growth (i.e. limited industrial investment, limited new builds) that will be necessary to sustain these communities.
- Timeline uncertainty/inconsistency illustrated in the Time and Cost Comparison evaluation in Watershed communities causes additional burden by creating planning challenges for property owners and businesses. For seasonal businesses or projects with construction season constraints, even a two-month approval timeline can determine project feasibility.
- Housing affordability was the most cited challenge by stakeholders interviewed. Additionally, this challenge was indicated by housing burden measures and the relative stability of median household income in the Watershed. Although this issue is not specific to the Watershed, it was one of the most cited challenges in these communities and should be recognized as a key challenge affecting community vitality.
- As discussed in the weather and climate impacts analysis, potential impacts from future extreme weather and storms due to steeper slopes and soil fragility, which is related to being in the Catskill Mountain range more than being in the Watershed.

3. What additional variables outside NYC programs / regulations could be a cause of concern to Watershed community vitality in future years?

Population, Housing Costs, and Out-Migration

Across all groups and individuals interviewed, the most cited causes for concern about community vitality in the Watershed were housing unaffordability and resulting population instability.

- Second Home Dominance: The influx of wealthy buyers is rapidly driving up property values, with several stakeholders noting that the average home price had gone up by as much as 90% in the last 2 years in their community. This is creating a market where locals are systematically being priced out.
- Out-Migration: It was reported by several interviewees that the high cost of housing and lack of local opportunities are leading to population loss of full-time residents in their communities, especially young people and families who are leaving for more affordable or opportunity-rich areas.
- Cultural Division: The changing demographic of more second homeowners/new transplants and fewer locals/primary homeowners could create a further deepening of cultural division between these groups, which could erode social cohesion (e.g., community connection and social/civic life). Fostering community will take intentional efforts to build up this social cohesion amidst changing and shifting demographics. The loss of this social cohesion could also lead to a decrease in knowledge and effectiveness

of Watershed programming (e.g., new/seasonal residents may not be aware of CWC funding opportunities or NYCDEP environmental regulations, potentially leading to less uptake of programs and detrimental effects to water quality).

- Land Ownership Crisis: High land prices and the purchase of property by second homeowners are preventing residents and farmers from being able to purchase affordable property.

Infrastructure Decay and Service Gaps

Outside of the infrastructure that is heavily subsidized by NYCDEP (WWTF, septic systems, etc.), some public and social infrastructure faces major systemic challenges:

- Transportation Barriers: There is a critical lack of public transportation in the Watershed. Some existing county bus services are ineffective because they do not drive across county lines, limiting workforce mobility, regional economic connectivity, and access to services.
- Healthcare Access: The Watershed suffers from healthcare system fragility, gaps in specialty care (forcing travel to distant cities), and significant difficulty with provider recruitment. Some residents must travel 35+ miles for basic services. In addition to this, the population is aging, often requiring a greater level of medical care.

Climate Change and Environmental Resilience

Climate-related factors/issues were noted not only by environmental groups, but elected officials as well as planners and economic development specialists.

- Climate Impacts and Flooding: The need for climate resilience and adaptation to increasing extreme weather events is listed as a major factor. This is an ongoing, long-term threat to the physical safety and economic stability of river-adjacent towns.
- Future Funding Uncertainty: Related to resilience, there is concern about future funding uncertainty for these environmental and community adaptation projects at the federal level (where the majority of funding comes from for emergency response repairs).

Economic and Social Changes

The ability for the communities to maintain a viable local economy and social structure is at risk from non-regulatory pressures:

- Small Business Sustainability: Small, front-facing businesses are struggling to sustain themselves, with some reportedly closing within 6 months of opening due to factors like undercapitalization and seasonal challenges with workforce and customers.

- Agricultural Decline: The decline of small family agriculture operations due to market pressure and succession issues is a threat to the community's character and economic diversity.[64]
- Declining School Enrollment: Stakeholders are concerned about the decline of school system enrollment in the Watershed. Strong schools are defined as a core pillar of vitality, and their collapse would severely impact the area's ability to attract and retain young families.
- Community Organization Decline: Most stakeholders interviewed cited a loss of civic engagement through the decline of community organizations like the American Legion. Most pressingly, the ongoing challenge statewide (and nationwide) of a decline in volunteerism is putting extreme pressure on emergency medical system (EMS) and fire departments that have relied on volunteers in these rural areas.[65]

4. What programmatic activities or initiatives may help improve community vitality?

Based on the findings from the analyses completed in Chapters 1, 2, and 3 as well as comprehensive stakeholder interviews/focus groups, multiple programmatic opportunities exist to improve community vitality while maintaining or enhancing water quality protection. These suggestions align with the 2020 National Academies Expert Panel recommendations incorporated into the 2022 Revised FAD, which emphasized optimizing program activities to continue effective water quality protection while enhancing community vitality.

The five most frequently cited concepts/recommendations (to focus time and resources) from the interviews and focus groups were:

- Workforce Housing: Create land trusts and employer-assisted programs to ensure essential workers can live locally.
- Hamlet-Centered Infrastructure**:** Target wastewater and other key investments in downtown/village centers to support water-quality-friendly density and economic vitality.
- Regional Coordination & Governance: Create unified, cross-county authorities (like a Regional Economic Development Authority) to pool capacity and coordinate strategy.
- Professional Capacity Building: Fund training institutes and local hiring (e.g., Conservation Corps, Septic Professional Training) to build local expertise and workforce.

[64] Refer to the benefits of agriculture analysis section for a greater discussion and limitations/open questions.
[65] Although the comparison of firefighters per capita between Watershed counties and Control counties showed that there were on average more volunteer firefighters in the Watershed counties, the observation from stakeholders demonstrates how the **overall numbers of volunteer firefighters has been declining and continues to decline in the Watershed,** which is a source of concern for future public safety. Additionally, looking at the Watershed counties instead of the numbers actually present within Watershed boundary obscures the true nature of the numbers of volunteers present in the Watershed.

- Reformed Financial Strategy: Repurpose the Catskill Fund for the Future (CFF) as a strategic leveraging tool to attract larger state and federal funds.[66]

Recommendations for key programmatic activities can be broken into two main categories: programs with direct dual benefits (to community vitality and water quality), and programs that improve vitality without negatively affecting water quality.

Dual Benefit – Improving both Community Vitality AND Water Quality

These program recommendations address core community vitality concerns while directly contributing to water quality enhancement/protection (reducing pollution, stabilizing ecosystems, accelerating BMP implementation, etc.).

Strategic Infrastructure and Land Use Program Recommendations

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Benefit
Target Infrastructure in Hamlet/Village Centers	1. Conduct comprehensive mapping to identify underutilized parcels near existing sewer/water capacity. 2. Prioritize sewer extensions and small municipal plant upgrades in hamlets identified as appropriate development centers. 3. Develop community septic systems.	Supports economic growth for small businesses and enables adaptation in the form of building renovations/in-fill.	Directs density away from sensitive Watershed land while still providing the necessary infrastructure (wastewater treatment systems) that allow business evolution and property development. Provides an environmentally sound, managed alternative to individual failing septic systems.

[66] If additional funding was made available, this would be a likely strategy. The CFF is the only fund/program that the Board of Directors is required by bylaws to manage and approve, and it is required to maintain the fund in perpetuity.

Wetlands for Community Resilience	1. Identify and fund strategic wetland restoration sites that provide maximum flood protection benefit to developed areas. 2. Develop low-impact recreation (e.g., boardwalks, viewing platforms) at accessible wetland sites.	Strategic wetland restoration provides maximum flood protection for developed areas and provides new recreation access (boardwalks) for both residents and visitors.	Enhances natural infrastructure for water filtration, soil stabilization, and flood mitigation.

Agriculture, Land Stewardship, and Soil Health Program Recommendations

These actions build on WAC's efforts and focus on maximizing the economic return of environmentally beneficial farming practices to ensure farm viability.

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Benefit
Next-Generation Soil Stewardship Incentives	1. Fund detailed soil capability analysis for farms in high-erosion risk areas (e.g., Delaware County). 2. Provide premium payments for conservation practices (e.g., permanent vegetation, riparian buffers) on fragile soils.	Provides enhanced financial support for farmers working on challenging terrain.	Focuses resources on fragile soils to prevent erosion and sedimentation of waterways.
Farm Viability Early Warning and Intervention	1. Establish an Agricultural Health Panel (consisting of WAC and financial experts, etc.) to review key financial	Provides proactive financial support (debt restructuring, grants) to maintain	Prevents the loss of farms with established Best Management Practices (BMPs), maintaining the

	metrics of participating farms for economic distress signals. 2. Provide immediate, flexible intervention funding for high-risk farms to prevent economic failure.	farming families and community stability.	working agricultural landscape.
Watershed Agriculture Premium Branding	1. Form an industry-led (could be led by WAC) cooperative to define rigorous, certifiable, quality standards required to use a "Catskill Watershed" brand. 2. Fund a targeted marketing campaign in NYC and regional markets to establish the brand as signifying high-quality and environmental stewardship.	Allows farmers to command premium prices by leveraging the Watershed's environmental reputation.	Creates a powerful economic incentive for farmers to adopt and maintain high-standard BMPs to protect water quality.

Compliance and Financial Assistance Recommendations

These actions aim to reduce bureaucratic friction, build local capacity, and shift the enforcement model from punitive to proactive and supportive.

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Benefit
Septic Professional Capacity Building	1. Partner with SUNY Delhi or BOCES to create a regional Septic Installer/Inspector	Creates local jobs (inspectors, installers) and reduces costs and service delays for property owners.	Leads to higher quality septic work, better maintenance, and potentially fewer system failures and violations.

	Certification Program. 2. Provide scholarships or grants to local residents entering the program and offer premium payment rates to newly certified local contractors to stimulate job growth.		

Recreation, Stewardship, and Workforce Recommendations

These actions focus on building a local, skilled workforce and ensuring recreation development is sustainable and data driven.

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Benefit
Watershed Conservation Corps	1. Establish a year-round, benefits-eligible workforce of 25-50 local residents focused on ecological services. 2. Partner with SUNY Delhi/BOCES to create a training institute.	Establishes entry-level, skilled jobs/careers for local youth or college students who want to return home, and addresses the lack of local workforce.	Creates a nimble, professional workforce for stream stabilization and invasive species control, aligning with the need for an integrated service delivery model with nonprofits.
Systematic Recreation/Trail Replication	1. Fund a comprehensive economic impact study of the Ashokan Rail Trail to create a replication template. 2. Establish Recreation Working Groups in each Watershed county, requiring formal Watershed town	Creates an economic catalyst for local businesses by drawing year-round tourism.	Concentrates use on durable, designed trails, reducing unmanaged dispersal of recreation seekers.

	support for all trail projects – utilize the Community Streamside Acquisition Program (CSAP) model as an example for its governance/partnership principles to guide recreation and trail development.		
Improve Visitor Tracking and Water Quality Monitoring at Existing Sites and Experiment with new Activities	1. Install automatic user counters at major trailheads and fishing access points and conduct more regular water quality testing (quantitatively as well qualitatively through photo documentation). The counter technology will provide real-time data on use patterns, peak periods, and trends (essential for capacity planning and demonstrating value) while the more routine water quality testing will contribute to a better understanding of the impacts that usage has on water quality. 2. Experiment with new permitted activities/uses in existing recreational areas by allowing a limited number of users to test out the activity. Track water quality results to assess impacts rather than providing blanket restrictions without	Provides greater transparency on how decisions are being made for expanding or restricting recreational access in the Watershed.	Provides more concrete evidence on recreation compatibility/impact, allowing for adaptive management to prevent contamination.

	systematic/transparent results. 3. Define and implement a Visitor Use Management Framework (VUMF) that uses water quality monitoring data as a policy trigger for adaptive management actions (e.g., temporary closures, increased patrols) when thresholds are exceeded.		

Improving Community Vitality without Negatively Impacting Water Quality

These programs would be beneficial for the community vitality (economic and social health) of the Watershed and are deemed to have a neutral impact on water quality when managed appropriately.

Workforce Housing and Social Infrastructure Recommendations

These actions target the fundamental crisis of housing affordability and access to essential services (like healthcare) required to retain a local workforce.

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Impact
Watershed Workforce Housing Initiative	1. Establish a regional Land Trust partnership with a dedicated fund for permanently affordable workforce housing. 2. Implement an Employer-Assisted Housing Consortium where CWC/DEP/Contractors subsidize down	Addresses the single most critical issue to attract and retain essential workers (teachers, contractors, healthcare).	Neutral (development must be coordinated near existing infrastructure and appropriate sites).

	payments or rent for essential workers.		
Employer-Assisted Housing Consortiums	1. Establish a Tax-Advantaged Consortium where major local employers (e.g., healthcare facilities, school districts, large contractors) pool funds. 2. Use the pooled funds to provide down payment assistance, rental subsidies, or low-interest second mortgages to local employees who will live within the service area (essential workers).	Helps major employers staff their operations by providing down payment/rental assistance to employees.	Neutral.
Accessory Dwelling Unit (ADU[67]) Incentive Program	1. Work with Watershed towns and counties to develop pre-approved ADU designs that meet all local zoning and Watershed Regulations. 2. Offer financial incentives (e.g., streamlined permitting, grants/low-interest loans covering up to	Increases housing supply without requiring new infrastructure or large land development projects.	Neutral.

[67] ADUs are being employed all over the US as a flexible method for adding housing units and increasing density in neighborhoods without needing to create major neighborhood changes or land disturbances (promotes sustainable development by utilizing existing land efficiently). These units create secondary, independent living spaces on single family lots, which adds rental options and provides financial relief to homeowners. They offer affordable housing for diverse groups, including young professionals, students, and elderly relatives.

	50% of hookup fees) for property owners who commit to renting the ADU to a long-term, year-round resident.		
Healthcare Infrastructure Investment	1. Advocate for and fund the development of regional transportation solutions (e.g., inter-county bus service) to connect residents to essential healthcare centers. 2. Support the creation of satellite health clinics or telehealth infrastructure in underserved hamlets to reduce travel time and connect the local population to care.	Addresses transportation barriers and supports staffing models (e.g., 4-day schedules) for essential services in underserved areas.	Neutral.

Economic Development and Agricultural Support Recommendations

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Impact
Regional Processing Hub & Mobile Units	1. Invest in shared facilities (commercial kitchens, cold storage, small-scale creameries) that multiple farms can utilize. 2. Provide startup funding and technical assistance	Creates new processing and logistics jobs; allows farms to capture value-added profits and diversify revenue.	Neutral (requires proper facility design and wastewater management).

	for mobile processing units.		
Establish a Regional Economic Development Working Group or Taskforce	Create a unified body with municipal and county representation to coordinate strategy across county lines (e.g., tourism, workforce development). This body would manage funding, advocate for transportation solutions, and coordinate regional partnerships.	Creates a unified body to coordinate funding and strategy, addressing the current fractured approach. Currently, 5 Watershed counties are split across 4 Regional Economic Development Councils (REDCs).	Neutral (potentially positive with increased/ more efficient financial leveraging for large scale projects that could protect water quality).
Regional Local Government Service Sharing Consortiums	1. To the extent it has not already been completed/done, conduct an audit of administrative needs (e.g., engineering, building inspection, planning) across 5-10 small Watershed towns. 2. Fund a pilot program where towns jointly hire a single shared professional (e.g., a certified town planner) to reduce individual town cost and increase the level of expertise available.	Reduces per-capita costs for small municipalities by sharing services like planning, engineering, and building inspection.	Neutral (potentially positive with increased skill sharing).
Agricultural Heritage and Cultural Preservation	1. Fund a Farm Transition Program that provides legal and financial assistance to aging farmers for succession planning, ensuring the farm remains in agricultural use. 2. Partner with local historical societies to	Preserves community identity, maintains social fabric, and attracts heritage tourism.	Neutral.

	develop Agri-tourism Routes and Educational Programs (e.g., farm-to-table experiences, historic farm stays) to generate additional non-commodity revenue for farmers.		

Governance and Administrative Efficiency Recommendations

These actions are focused on increasing public trust, accountability, and the efficiency of inter-municipal and regulatory processes.

Recommended Program/Action	Specific Components/Steps	Community Vitality Benefit	Water Quality Impact
Reimagined Catskill Fund for the Future (CFF) .	1. Redefine CWC CFF's charter to explicitly focus on using its resources as a local match to leverage larger state and federal grants (e.g., Downtown Revitalization Initiative). 2. Expand scope to include residential workforce housing lending.	Creates a strategic financial tool to fund community priorities, maximizing investment returns.	Neutral (potentially positive if leveraged for largescale infrastructure improvements).
Digital Submission System	1. Develop a single online platform for all permit applications, reporting, reimbursement requests, and status tracking. 2. Integrate an automated checklist and "clock stop" protocol to provide	Reduces frustration, eliminates excessive paperwork and provides certainty for developers, which is crucial since uncertainty and time stymie development.	Neutral.

	definitive review timelines.		
Transparency and Communication Enhancement	1. Develop a Public Data Dashboard[68] that publicly displays key metrics like Permitting Time Differential[69] and Programmatic Funding Allocations by town. 2. Implement a proactive communications strategy that highlights the quantified economic benefits (e.g., jobs created, flood damage avoided) of Watershed investments through NYCDEP financial support.	Builds trust and reduces antagonism through a Public Violation Dashboard and Annual Compliance Reports demonstrating fairness.	Neutral.
Violation Appeals Process	1. Establish a clear, documented, and easily accessible public process for property owners to appeal or contest a Watershed regulation violation. 2. Ensure the appeals board/process includes representation from local municipal government and	Provides a clear, accessible path for property owners to contest violations or request alternative compliance.	Neutral.

[68] See answer to Key Question 5 about suggested measurement frameworks.
[69] See the timeline evaluation for stormwater water projects in the Time and Cost Comparison section of this report for specific recommendations related to this.

	engineering/legal experts to ensure fairness and reduce the perception of unilateral enforcement.		

Technical Standards Modernization

A key critique from communities in the Watershed was that there are negative cost and time restrictions to development because of the additional regulations by NYCDEP. Some of these challenges were highlighted in the Time and Cost Comparison Evaluation. Although it may be difficult to fully categorize or correlate the full scope of negative burden that these regulations have on the Watershed communities, the evaluation did highlight several higher impacts to cost and time to perform development in the Watershed than outside the Watershed.

If sustaining community vitality means creating opportunities for people to move to and live, work, play, and stay in the Watershed, technical adjustments could be made to regulations to make it easier to develop while still maintaining water quality.

In addition to the programmatic recommendations made above, the CGR Consulting Team received explicit feedback from engineers and contractors who work both inside and outside the Watershed on improvements that could be made to technical standards and the review process:

- Convene technical standards review committee to evaluate requirements like 250-foot setbacks with rigorous technical justification.
- Transition to performance-based standards allowing engineering innovation while protecting water quality.
- Establish regional review standardization ensuring consistent interpretation across DEP field offices.
- Align Watershed-specific requirements with state standards where technically justifiable.
- Evaluate the one-acre disturbance threshold against water quality data to determine if selective adjustment to align with DEC's five-acre standard would be technically justified for low-risk areas.
- Create categorical exemptions for routine residential development under two acres with standard BMPs.
- It is understood that clear ‘clock stop’ protocols for approval and completeness for design reviews are included in Section 18-23 of the Watershed Regulations; however, interviewed engineers expressed confusion and frustration around technical comment review timelines, so increased education/alternative methods of communication should be considered and potentially implemented.

- Set maximum response time standards for applicant revisions to prevent project delays attributed to applicants rather than review process.
- Create project manager assignments for larger stormwater projects ensuring single point of contact and coordination.
- Establish technical review panels including practicing engineers to evaluate disputes between design professionals and agency reviewers.
- Ensure DEP reviewers have practical design experience and understand engineering professional standards.
- Clarify distinction between mandatory regulatory requirements and preferred design approaches, allowing professionals latitude within code-compliant parameters.
- Develop expedited review pathways for experienced Watershed engineers with demonstrated track records of compliant designs.
- It is understood that standardized guidance documents (Applicant Guides), in accordance with obligations and protocols of the Watershed MOA, are made available by DEP to the public for each permit and approval (including variances) required by the Watershed Regulations and that Electronic copies of the Applicant Guides, which include checklists of required items, are included on DEP's website and are routinely shared with applicants and their design consultants; however, interviewed engineers expressed confusion and frustration around the process, so increased education/alternative methods of communication should be considered and potentially implemented.
- Implement tiered review system distinguishing between routine residential, complex residential, and commercial/industrial projects.
- Create pre-approved design templates for routine permit renewals or projects like culvert replacements.
- Develop simplified SWPPP templates for single-family residential lots eliminating unnecessary complexity.
- Establish performance metrics and accountability measures for review timelines, ensuring predictability for applicants.

Cost Mitigation Programs

The Time and Cost Comparison evaluation demonstrated that actual project costs for septic repairs/upgrades often exceed CWC reimbursement rates, with one engineer's examples showing gaps between $1,450 and $4,000 per project. Overall Watershed project costs can reach 1.5-2X the cost outside the Watershed. While some cost differential reflects comprehensive enforcement of all applicable regulations, opportunities exist to reduce unnecessary costs.

- Adjust CWC reimbursement rates to reflect documented actual costs of Watershed-compliant design, particularly for projects requiring extensive coordination across multiple agencies.
- Create supplemental assistance category for redesigns required by agency review comments when initial designs were code compliant.

- Establish upfront cost-sharing for professional fees during the pre-application phase to reduce financial barriers to proper project planning.
- Develop sliding-scale assistance based on project size and property owner income, ensuring affordability for modest residential projects.

5. How can measures be continually reviewed and updated regularly? What processes exist or should be formed for sustained monitoring of community vitality variables? This must include a long-term strategy and process for ongoing monitoring of community vitality variables.

Building on the previously completed 2023 Community Vitality Report (Sternberg et. Al., University of Buffalo) – which built on the National Academy of Science, Engineer, and Medicine (NASEM) expert panels' 2020 recommendation to conduct a comprehensive community vitality study in the Watershed – the following recommendations revolve around establishing sustained monitoring processes for community vitality, which is essential for tracking progress, informing policy decisions, and ensuring accountability.

Recommended Structure

Depending on the level of resources available (and therefore the level of importance placed on the measurement of community vitality and what ongoing measurement/monitoring is ultimately intended to accomplish), there are several recommended overarching structures/approaches (organized by least to most involved/expensive) that could be taken:

- In five years, contract with an external consultant and conduct a similar study to this one and reuse the same metrics and methodologies to assess any changes since the study was completed.
- Contract with an outside consultant to create and maintain a virtual dashboard which would be used for monitoring and updating metrics of community vitality on a more regular basis.
- Establish dedicated Watershed Community Vitality Research Unit housed within appropriate institution (CWC, academic, or partnership)
    - Staff with permanent researchers developing deep knowledge of Watershed complexities.
    - Create advisory board including DEP, CWC, county governments, and community representatives.
    - Provide secure funding stream through FAD requirements or Watershed program budgets.

With any of these options, in the interim, it is recommended that the stakeholders use the findings from this report to advise the formation and negotiation of the newest FAD, and through this process, create an advisory board including DEP, CWC, county governments, and

community representatives to discuss this topic on a monthly basis to assess what program options to implement, decide on what metrics to track, etc.

Suggested Components of a Monitoring System

For any measurement and monitoring system, the following would be recommended components:

- Develop integrated database system tracking metrics at town, county, and Watershed levels.
- Create data sharing agreements with state and county agencies (to avoid issues with retrieving data when requested or FOIL).
- Implement GIS capabilities for spatial analysis of development and demographics.
- Establish regular survey mechanisms for qualitative community perceptions data.
- Develop automated data collection processes ensuring consistency.
- Consider creating a community vitality index tailored to the Watershed (or use something like the Social Vulnerability index) in lieu of separately analyzing all community vitality metrics to increase efficiency and potentially create more systematic approach to evaluating vitality in different parts of the Watershed.

Monitoring Framework and Metrics

If the CWC and other stakeholders decide to pursue the path either with an updatable online dashboard or a research unit dedicated to studying, monitoring, and evaluating community vitality, the following describes strategies for short term and longer-term planning for monitoring and measurement.

Annual Monitoring

- Regulatory compliance costs and permit processing times.
- Wastewater sewer rates and service availability/capacity remaining.
- Partnership program funding – tracking which municipalities have residents utilizing the funds, which do not, and how this funding is distributed.
- Environmental violations by type and municipality.
- Agricultural land availability and WAC program enrollment.
- Public land access and recreational opportunities.

Biennial Monitoring

- Population trends and demographic composition by municipality.
- Housing market conditions including affordability, vacancy rates, and second home trends.
- Employment patterns, income levels, and business development.
- Infrastructure capacity and service delivery quality.
- Climate resilience indicators and adaptation measures.

Five-Year Comprehensive Review

- Comprehensive community vitality assessment comparing Watershed to Control groups.
- Stakeholder interview process similar to this study – have issues changed?
- Evaluation of programmatic initiatives and their effectiveness.
- Assessment of emerging trends and threats.
- Recommendations for program adjustments and new initiatives.

Comparative Analysis Framework

This study's comparative methodology could be maintained in ongoing monitoring. The framework provides context for understanding whether changes result from Watershed-specific factors or broader regional trends.

Control Group Maintenance

- Maintain comparison with control counties (Chenango, Otsego, Columbia) for regional context
- Track Control towns for intra-county comparisons
- Monitor rest-of-New York State averages for statewide context
- Periodically review control group selection ensuring continued comparability

Integration with Policy and Decision-Making

The 2022 Revised FAD required community vitality studies with results informing future FAD program activities. Sustained monitoring should be integrated into this cycle.

Recommended Integration

- Align comprehensive five-year assessments with FAD revision cycles.
- Provide annual progress reports to FAD oversight agencies.
- Include community vitality metrics in FAD compliance assessments.
- Use monitoring data to inform FAD program rebalancing decisions.
- Establish mechanisms for incorporating vitality findings into water quality program design.

Stakeholder Engagement and Transparency

Recommended Practices:

- Conduct regular stakeholder consultations to identify emerging issues and refine approaches.
- Publish annual community vitality reports accessible to Watershed residents.
- Create dashboard or web portal providing real-time access to metrics.
- Hold public meetings in Watershed communities to discuss findings.
- Establish feedback mechanisms for communities to report concerns or data gaps.

Adaptive Management and Program Evolution

Sustained monitoring is only valuable if findings inform policy adjustments. The system should incorporate adaptive management principles allowing responsive changes.

Recommended Mechanisms:

- Establish threshold triggers for interventions when metrics indicate declining vitality.
- Create rapid response capability for emerging crises identified through monitoring.
- Develop pilot program framework for testing innovative approaches suggested by findings.
- Implement regular program evaluation assessing effectiveness of vitality initiatives.
- Build flexibility into program design allowing adjustments based on monitoring outcomes.

Implementation Roadmap

Below is an example implementation road map for if the CWC and other stakeholders decide to pursue either a research unit or the data dashboard option.

Phase 1: Foundation Building (Months 1-12):

- Establish institutional structure and secure funding
- Recruit permanent research staff or establish contractual agreement with an external consultant, and form advisory board
- Develop database infrastructure and establish data sharing agreements
- Finalize metric definitions and data collection protocols
- Create baseline documentation using findings from this study

Phase 2: Initial Operations (Months 13-24):

- Conduct first annual monitoring cycle collecting core metrics
- Develop public dashboard and reporting mechanisms
- Establish stakeholder engagement processes and feedback systems
- Publish inaugural community vitality report
- Conduct methodology review and refine approaches based on experience

Phase 3: Full Implementation (Months 25-36):

- Complete first biennial detailed assessment
- Integrate monitoring findings into program decision-making processes
- Launch pilot programs based on monitoring insights
- Establish routine operational procedures and quality control protocols
- Document lessons learned and refine long-term strategy

Some Additional Areas for Future Research and Lessons Learned

Throughout the study (as well as through feedback received by stakeholders on the draft version of this report), the CGR Consulting Team noted areas of study that could be considered for future research as well as documented real challenges with acquiring data on metrics that were initially proposed but later removed from analysis. A bulleted list of some potential areas of study and challenges is presented below.[70]

- **Connections between metrics:** Feedback received on the draft of this report indicated questions about analysis linking several metrics together. For example, one reviewer asked about the interactions among median household income, poverty, and level of developable lands. While it was beyond our scope to tease out the interaction among these variables and to propose a coherent story, future studies should build on this report by developing and testing hypotheses about the interactions and larger narratives connecting key variables.
- **Children and Youth:** An area of concern that was not the focus of our study relates to how the decline in the population of children and youth impacts the delivery of education services. This could be further explored through interviews and data collection strategies that revolve around school operations in the various districts in the Watershed and outside of the Watershed.
    - In July 2025, a concerned citizen wrote a formal letter to the CWC about the potential impacts that easements in the Watershed were having on the Foundation Aid calculation in Delaware County (letter included in **Appendix D**); the issue outlined in this argument could be considered for future research.
- **Effective Local Government, Infrastructure, and Citizen Engagement:**
    - This report considered tax rates (for example, municipal and county tax rates) and property values (for example, TAV); however, a more thorough approach would be to examine the amount of property tax levied by the numerous layers of government (Counties, Towns, Villages, School Districts, Fire Districts) in a given area to follow its trend over time. This would show how fast the cost to provide services of various types is rising (cited by many stakeholders on the issue of affordability).
- **Health, Well-Being, and Public Safety:**
    - Level of access to home care resources (indicated as a large problem through feedback on the draft of this report)
- **Social Vitality and Amenities:** As noted in the Social Vitality section (and seen in **Appendix B** where metrics removed from the study are documented), data collection for this section

[70] Additionally, several sections of this report document other areas of research that do not necessarily fall within the topic of community vitality (for example, in the Market Effects of Agricultural Investment section, which discusses areas of research for assessing effectiveness of agricultural programs in the Watershed).

was challenging because response levels from individuals in towns (such as clerks or supervisors) were very uneven. Information was too spotty to use in the Watershed and even more uneven from Control towns.

- One recommendation for future study would be to design and conduct a more thorough and planned survey that systemized data collection for key variables of interest.

Conclusion

Sustained monitoring of community vitality variables represents a critical evolution in Watershed management, paralleling the extensive monitoring already in place for water quality protection. By establishing dedicated research capacity, systematic data collection, and integration with policy decision-making, the Watershed can effectively track community vitality outcomes and adaptively manage programs to optimize both water quality protection and community well-being.

The combination of annual metrics, biennial assessments, and comprehensive five-year reviews provides the appropriate balance between continuous monitoring and in-depth analysis. This framework enables early identification of emerging challenges, evidence-based program adjustments, and transparent accountability to Watershed communities and stakeholders.

As the 2022 Revised FAD emphasized, the goal is to optimize the mix of program activities to continue effective water quality protection while enhancing the incremental benefits to community vitality. Sustained monitoring provides the essential information infrastructure to achieve this optimization, ensuring that Watershed management decisions are informed by comprehensive data on both water quality and community vitality outcomes.

Appendix

Appendix A CWC Community Vitality RFP

Catskill Watershed Corporation

Request for Proposal for Contract

Study of Economic Vitality of the West of Hudson Watershed

November 14, 2024

Catskill Watershed Corporation
669 County Hwy 38, Suite 1
Arkville, NY 12406
845-586-1400 voice
845-586-1401 fax

SECTION I

ADMINISTRATIVE INFORMATION

1.0 PURPOSE

The Catskill Watershed Corporation (CWC) is seeking proposals from interested persons to conduct a study of the community vitality of the West of Hudson Watershed region, as defined herein. Successful bidder will utilize the 2020 National Academy of Sciences Report, the 2023 Community Vitality in the Catskill Watershed Report, and the 2023 Rural New York: Challenges and Opportunities Report.

1.1 SCOPE

The information and instructions contained in this Request for Proposal (the "RFP") are intended to provide interested individuals with the data necessary to prepare and submit proposals.

Section I	Contains administrative information.
Section II	Presents background information on the program, specifies required program components and outlines the areas that should be included in the proposal narrative.
Section III & IV	Specifies contracting provisions.

1.2 INQUIRIES

Inquiries should be addressed to:

Timothy Cox
timothycox@cwconline.org
Catskill Watershed Corporation
669 County Hwy 38, Suite 1
Arkville, NY 12406
Tel (845) 586-1400 Fax (845) 586-1401

All inquiries must cite the particular RFP section in question. Answers to all questions of a substantive nature will be given to all offerors being solicited by e-mail only.

1.3 SCHEDULE OF PERTINENT DATES

RFP Release Date: **November 14, 2024**

Pre-Bid Conference: **January 8, 2025**

Proposal Submission Date: January 23, 2025 - No later than 3:00 pm,

1.4 SCHEDULE OF PROPOSALS

Interested respondents must submit two (2) copies to CWC of the proposals no later than 3:00 P.M., January 23, 2025.

Submit proposals by mail to the following address:

Timothy Cox
Catskill Watershed Corporation
669 County Hwy 38, Suite 1
Arkville, NY 12406

It is important that the proposal be submitted in a sealed envelope/box clearly marked in the lower left-hand corner with the following information:

SEALED PROPOSAL

For: Community Vitality Study

It is the respondent's responsibility to ensure timely submission of his/her proposal. Proposals received after the scheduled date and time will not be accepted. Electronically transmitted proposals (i.e., facsimile or e-mail) will not be accepted. Please note, due to the rural nature of the community, some delivery services may not be able to guarantee next day delivery by the due date and time.

1.5 MODIFIED PROPOSALS

Respondents may submit a modified proposal to replace all or any portion of a previously submitted proposal up until the Proposal Due Date. CWC will only consider the latest version of the proposal.

Modified Proposals shall be addressed same as above.

1.6 WITHDRAWAL OF PROPOSALS

a. A proposal may be withdrawn before the established Proposal Due Date/Time, in writing only.

b. Any request for withdrawal shall be addressed same as above.

1.7 RFP POSTPONEMENT/CANCELLATION

The CWC reserves the right to postpone or cancel this RFP and to reject all proposals. In the event that this occurs, the CWC reserves the right to modify this RFP and re-solicit for it.

SECTION II

PROGRAM BACKGROUND AND SPECIFICATIONS

2.0 PROJECT OBJECTIVES

The Objective of this proposal is to conduct a study of the economic vitality and social character of the communities of the West of Hudson Watershed.

2.1 BACKGROUND

The Catskill Watershed Corporation is a not for profit local development corporation founded in 1997 by the historic Memorandum of Agreement between the City of New York, the 50 watershed municipalities, New York State and several environmental groups where the West of Hudson reservoir system is located. CWC money can only be spent for the benefit of the watershed towns. CWC in collaboration with NYC Department of Environmental Protection (DEP) and other parties are undertaking a study of community vitality in the West of Hudson Watershed. The purpose of the study is to examine the economic vitality and social character of the communities in the West of Hudson watershed and identify certain metrics of such vitality that can be periodically updated. For the purposes of this request for proposal, West of Hudson Watershed shall mean those towns with 1,500 or more acres in the West of Hudson Watershed as shown in Exhibit A.

2.2 SCOPE OF SERVICES

Chapter 1: – Demographic, Income Comparison

Utilizing 2020 National Academies of Sciences, Engineering and Medicine (NASEM) Report entitled "Review of the New York City Watershed Protection Program"[1], "COMMUNITY VITALITY IN THE CATSKILL WATERSHED: Definitions, Indicators, and Policies" and

[1] https://nap.nationalacademies.org/catalog/25851/review-of-the-new-york-city-watershed-protection-program

"Rural New York: Challenges and Opportunities"[2] the selected consultant will conduct a study to determine the current status of the West of Hudson Watershed towns (as defined above) in comparison to other towns within Delaware, Greene, Schoharie, Sullivan and Ulster Counties. The Community Vitality report is attached as Exhibit B. A control group of the remaining towns within Delaware, Greene, Schoharie, Sullivan, and Ulster Counties that are not within the West of Hudson Watershed (towns listed in Exhibit A) shall also be studied in identical fashion for comparison. The study will address at a minimum community vitality measures from the Exhibit documents. In addition to those variables, the following categories and metrics may be used for comparison:

1. **<u>Business and Industry Vitality Metrics</u>**

a. Cost of Living variables
   i. Average and median household income and poverty rate
   ii. Cost of living vs. average and median household income
   iii. Real estate costs
      1. Real property costs
      2. New development costs
      3. Rental rates and availability
   iv. Development rates: New homes built in each town per year, Building permits by town, time to complete, cost analysis.

2. **<u>Hamlets and Villages</u>**

a. Public Utilities - Climate Change initiatives being considered as well:
   Broadband
   Cell service
   Public sewer and private sewer
   Public or private water services

3. **<u>Community Vitality</u>**

a. Total population and demographic breakdown
b. Levels of educational attainment
c. Unemployment rates
d. Types of employment
e. Travel time to employment
f. Rates of pay
g. Housing availability: Number of housing units over time
h. Schooling
   1. School enrollment rates/trends
   2. School district size, travel times
   3. Graduation rates

4. **<u>Healthcare:</u>**

a. Number and location of healthcare, specialists, emergency or urgent care

[2] https://www.osc.ny.gov/files/reports/pdf/challenges-faced-by-rural-new-york.pdf

b. Number and location of substance abuse and mental health counseling

5. **Natural Resources and Recreation**

a. Location of access points to public lands or preserves open to public recreation.
b. Location of fishing access, hiking, other outdoor activities

6. **Agriculture**

a. Agricultural Statistics

The successful consultant may propose the removal or addition of metrics based on consultant's professional judgment/recommendation in value towards the study. All such recommended deletions or additions must be approved by CWC. The successful consultant may also propose a more appropriate control group based on consultant providing detailed justification. Changes to the control group must be approved by CWC.

Chapter 2: - Land Development and Regulatory Analysis

Chapter 2 of the study will evaluate areas of development opportunities and regulatory controls within the Watershed. The chapter at a minimum should evaluate:

a. Available developable land within the Watershed vs. control group[3]
b. Number of acres and percentage total within each town wherein development is prohibited or otherwise limited by easement or public ownership.
c. A summary of Regulatory burdens
    a. Additional time and incremental costs associated with Watershed Regulations section 18-39
        1. Septic design approval timelines/processes/costs
            a. New construction
            b. Septic repairs
        2. SWPPP design approval timelines/processes/costs
        3. WWTP design approval timelines/processes/costs
        4. Stream design approval timelines/processes/costs; County Soil and Water Conservation District project timelines/costs
d. Number of environmental violations (NYCDEP, NYSDEC, NYSDOH) issued within each town by regulatory authority and by type vs. control group
e. Time and Cost comparison of construction activity (housing, septic, stormwater, site work) in the Watershed vs control group.
f. An evaluation of how these regulations negatively affect other demographic data presented in Chapter 1.
g. Wastewater rates charged per property within sewer districts.

[3] Developable Land is defined as land privately owned, less than 15% slope and outside of 100 foot buffer of New York State wetlands, watercourses, or New York City reservoirs. See attached CWC Developable Land Analysis for Town of Olive (2017) as an example of such methodology

Chapter 3: - Funding Availability, Employment Opportunities, Recreation

Chapter 3 of the study will evaluate positive attributes and negative attribute mitigation measures in the Watershed. The chapter at a minimum should evaluate:

a. Amount of Watershed Partnership Program Funds received by property owners within each town within the last ten (10) years. NYCDEP, CWC, Watershed Agricultural Council (WAC), and respective soil and water districts will be the source of this information.
b. Amount of funds provided through other state entities:
    1. Environmental Facilities Corporation
    2. Empire State Development
    3. Other
c. Number of individuals wholly or partially employed through Partnership Program Funds in each town, including but not limited to direct employment to DEP, CWC, WAC, and entities contracted by same or contracted to complete projects funded by CWC, WAC, and directly or indirectly NYCDEP.
d. Recreational opportunities, including number of acres of publicly owned in each town open to hunting, hiking, and fishing.
e. Agricultural benefits to the region: available agricultural land, funding, etc.

The successful consultant may propose the removal or addition of metrics based on consultant's professional judgment/recommendation in value towards the study. All such deletions or additions must be approved by CWC.

Chapter 4: - Summary and Recommendations

Chapter 4 will provide a summary as to the overall assessment of the community vitality in the Watershed.

1. Do Watershed communities see a net positive or negative based on the totality of variables associated with NYC regulations and programs?
2. What are the biggest variables contributing negatively to community vitality?
3. What additional variables outside NYC programs/regulations could be a cause of concern to Watershed community vitality in future years (electrification, out migration, housing costs or availability, wetland regulations, PFAS/PFOA regulations at WWTP's, climate change, flooding, emerging contaminants, etc..)
4. What programmatic suggestions may help improve community vitality that do not currently exist? Suggestions may include existing partnership programs or new programs that improve community vitality and preferably also contribute to water quality protection. Additional considerations may be offered if they don't specifically contribute to improving water quality but do not negatively affect water quality.
5. How can measures be continually reviewed and updated regularly? What processes exist or should be formed for sustained monitoring of community vitality variables?

ii. All submissions must include a long term strategy and process for ongoing monitoring of community vitality variables.

The successful consultant may propose the removal or addition of metrics based on consultant's professional judgment/recommendation in value towards the study. All such deletions or additions must be approved by CWC.

Deliverables: The study consultant will provide the following deliverables as part of this study:

a. Project Management Plan – 30 days after contract execution
b. Project Schedule – 30 days after contract execution
c. Finalization of metrics – 90 days after contract execution
d. Draft Final Report – 300 days after contract execution
   Report will include at a minimum:
   1. Presentation in narrative and tabular form evaluation and metrics requested by this RFP and/or as agreed upon
   2. An overall assessment of the Community Vitality in the West of Hudson Watershed
   3. Suggested next steps and frequency of updating of metrics
   4. Recommendations for additional watershed partnership opportunities
e. Final Report – 365 days after contract execution

Meetings: The study consultant will conduct/participate in the following meetings each anticipated to last 2 hrs in duration:

a. Participate in Kick-off Meeting – 30 days after contract execution
b. Proposed metrics discussion (up to two meetings) 60 days after contract execution
c. Participate in Status Meetings – Up to four
d. Conduct Draft Final Report Briefing –
e. Conduct Final Report Briefing

To complete the foregoing the successful consultant and CWC will enter into an agreement shown in Exhibit D, and subcontractor forms in Exhibit E.

2.3 **PAYMENT**

It is anticipated that Payments shall be on an hourly basis based upon fees proposed for the Project Tasks for each phase of the project (see - Scope of Services section 2.2). All Project Management services will be paid on such hourly basis in accordance with the Payment Schedule provided in the Contract.

2.4 **INSURANCE**

Vendors retained by Catskill Watershed Corporation must have liability insurance in sufficient amount and scope to protect the interests of New York City and CWC. New York City and CWC

shall be named as additional insureds for any such consultant. Insurance specifications are included in Exhibit C.

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SECTION III

PROPOSAL CONTENT AND CONDITION

3.0 GENERAL INFORMATION

In preparing the proposal, the offerors should follow the guidelines within this RFP. Proposals shall include a not to exceed total bid amount for work. Personnel and associated hourly rates shall be included as part of bid submission.

3.1 PROPOSAL SPECIFICATIONS

Proposals should contain the following sections:

- Company Name
- Contact person and e-mail address
- Employer identification number
- Office Address and phone number
- Fee Proposal as outlined in Section 2.3 identifying hourly rates for the duration of the project (anticipated to be twelve months) and employee job titles. Principals shall also be identified by name
- Company's experience with similar projects
- Terms and conditions
- Signed statement of Non-Collusion (Required)
- Evidence of adequate insurance and additional insureds specifications
- Subcontractor Approval Form
- Subcontractor Profile Form

3.2 CONDITIONS GOVERNING PROPOSALS

Only respondents who have supplied complete information will be considered.

CWC reserves the following prerogatives:

* To accept or reject any or all proposals;
* To waive or modify minor irregularities in proposals received;
* To negotiate with the proposers, within the proposal requirements, to best serve the interests of the residents of the watershed;

* To amend the specifications after their release, with due notice given all proposers solicited to modify their proposals to reflect the changed specifications; and

By submitting a proposal, the respondent agrees that he/she will not make any claim for or have any right to damages because of any lack of information or misinterpretation of the information provided in this RFP.

Once a contract has been fully executed and approved, CWC has the right to cancel it, for cause or convenience, on 10 days written notice, and agree to pay the individual for charges incurred in the performance of the agreement up to the time of cancellation.

3.3 SELECTION CRITERIA

The proposals will be evaluated by the Catskill Watershed Staff and selected Committee Members. The firms will be selected utilizing the following criteria:

Proposal - Proposals will be evaluated on the basis of whether the charges for services are reasonable and fair, given the services to be provided.

3.4 FREEDOM OF INFORMATION LAW

CWC has subjected itself to the Freedom of Information Law, which governs the process for the public disclosure of certain records maintained by governmental entities, (see Public Officers Law, Sections 87 and 89), except for the public notice and enforcement requirements of sections 104 and 107 of the Public Officer's Law, respectively.

Individuals who submit proposals may request that CWC except all or part of such proposal from public disclosure, pursuant to Section 87(2)(d) of the Public Officer Law, on the ground that the proposal contains trade secrets, proprietary information, or that the information, if disclosed, would cause substantial injury to the competitive position of the individual submitting the information. Such exception may extend to the information contained in the request itself, if public disclosure would defeat the purpose for which the exception is sought. The request for such exception must be in writing and state the reasons for the requested exception.

If CWC grants the individual's request for exception from disclosure, CWC shall keep such proposal in secure facilities and shall notify the individual of any request received for disclosure of the proposal.

3.5 NOTIFICATION OF AWARD

The CWC will notify the successful respondent verbally, followed by written confirmation. Each individual whose proposal is rejected will be notified in writing by the CWC. Notification will occur on or after February 20, 2025.

A contract defining all terms and conditions of the parties will be drafted by CWC. The contract may incorporate specifications of this RFP, and so much of the successful individual's final proposal as may be appropriate among its provisions.

3.6 LIABILITY

CWC is not liable for any costs incurred by any respondent for work performed to prepare his/her proposal or for any work performed in connection therewith prior to the date the contract is fully executed.

SECTION IV

CONTRACTUAL INFORMATION

4.0 CONTRACT TERM

The contract term will be one year. The contract term may be extended upon approval of the parties.

4.1 SUBCONTRACTING REQUIREMENTS

The selected vendor may not subcontract any work on this project without prior approval of the CWC.

4.2 PAYMENT PROCESS

Payments for services performed to the satisfaction of CWC and based on hourly fees shall be made within thirty (30) days receipt of duly authenticated invoices/vouchers and upon approval by the CWC.

Invoices shall be submitted no more than once a month, and include a detailed description of the services performed by the consultant for which the consultant is seeking payment.

4.3 STATEMENT OF NON-COLLUSION

The statement of non-collusion is on the subsequent page. Please sign and submit the statement with your bid proposal.

Bids will not be accepted without a signed statement at time of submission.

STATEMENT OF NON-COLLUSION

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

(3) No attempt has been made or will be made by the bidder to induce any other, person, partnership or corporation to submit a bid for the purpose of restricting competition.

I hereby agree to the best of my knowledge that the statements above are true and correct, and I am authorized to sign this form on behalf of the bidder.

_____ _____

Authorized Signature of Bidder

Date

EXHIBIT A - WATERSHED TOWNS

Delaware County
Andes
Bovina
Colchester
Delhi
Deposit
Franklin
Hamden
Harpersfield
Kortright
Masonville
Meredith
Middletown
Roxbury
Stamford
Tompkins
Walton

Greene County
Ashland
Halcott
Hunter
Jewett
Lexington
Prattsville
Windham

Schoharie County
Conesville
Gilboa
Jefferson

Sullivan County
Neversink

Ulster County
Denning
Hardenburgh
Hurley
Olive
Shandaken
Wawarsing
Woodstock

Appendix B Removal and Change of Metrics Tracker

Metric			Rationale
Chapter	Category	Measure	Why was This Measure Removed?
Chapter 1	Population and Demographics	Total Population (by Race)	1. This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CWC told CGR this could be removed. 2. No clear rationale for evaluating race breakout as a connection to watershed rules.
Chapter 1	Population and Demographics	Total Population (by Ethnicity)	1. This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CWC told CGR this could be removed. 2. No clear rationale for evaluating ethnicity breakout as a connection to watershed rules.
Chapter 1	Business & Industry Vitality	Total # Member Businesses Working with County Chamber of Commerce	The number of businesses working with Chambers is a function of Chamber success in courting members and not necessarily a measure of vitality of business. Additionally, the presence of regional chamber geographies complicates measure.
Chapter 1	Business & Industry Vitality	# Farms	Number of farms is not a measure of agricultural productivity or a measure of agricultural output. It would prove difficult to contrast number of farms and or agricultural output -- this may vary with the environmental and physical chartacteristics of land (e.g., soil productivity).
Chapter 1	Business & Industry Vitality	Total $ Generated from Farm Activities	Agricultural revenues may be highly dependent on the physical characteristics, weather, or other factors that do not have a relationship to the evaluation.
Chapter 1	Business & Industry Vitality	# Exemptions and Total $$ Tax Exemption to Farmers/Agricultural Land	As discussed the 3/27/27 feedback meeting between CWC and CGR, this isn't a metric/indicator.
Chapter 1	Business & Industry Vitality	# Acres of Farmland	This metric morphed into a slightly different metric and additional metrics were included in the Agricultural Analysis; see the finalized list of metrics in the report for details.
Chapter 1	Business & Industry Vitality	Total # Local Businesses by Sector, Total # Business Closures, Total # New Business Startups, % Number of Livable Wages Jobs	Most of these metrics listed here are evaluated, but the methodology/description has changed based on preferred methodolgy; see the finalized metrics list in report for the way the metric is described. Additionally, several metrics were added to this category and all evalautions were completed at the County level because Town and Zip Code level were not available.
Chapter 1	Personal Economic Well-Being, Education, and Workforce	Average Household Income	1. This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CWC told CGR this could be removed. 2. This measure is redudandant with median household income.

Chapter 1	Personal Economic Well-Being, Education, and Workforce	% of Workers working from home	This would be difficult to interpret results - there are many reasons why someone may report "working remotely or from home" and this could make it convoluted and not have impact (i.e., no single definition/interpretation).
Chapter 1	Personal Economic Well-Being, Education, and Workforce	Workers' Commute Time, by Means of Transportation to Work	This was separated into two metrics and evaluated (i.e., means of transportation to work" and "average commute time to work".)
Chapter 1	Personal Economic Well-Being, Education, and Workforce	Education Levels of Adults (by Sex)	The Consulting Team doesn't have a theory that the watershed causes gender differences in adults. If we found a difference inside and outside the watershed, how would we interpret it?
Chapter 1	Children and Youth	Childcare Centers Per Capita	This was included but changed to "Childcare Programs per 1,000 children" as better quality data was more readily available, it provided a clear picture of all child care options (inclusive of all regulated day care programs, home-based and school-aged), and it was done per 1,000 children to see what service looked like proportion to the number of children being served.
Chapter 1	Children and Youth	School District Size	This was included in the RFP, but CWC stated during the 3/27 meeting they were fine removing this and this isn't really an indicator. See description in next column for how this information could be collected.
Chapter 1	Children and Youth	Travel Times (Location/Proximity to Towns if Outside of Town)	This information would be extremely difficult and time consuming to obtain and wouldn't provide impactful information (i.e., how would you compare between school districts associated with watershed v non-watershed, how would you assess trends over time, etc.)
Chapter 1	Children and Youth	School Enrollment Rate	1. This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CWC told CGR this could be removed. 2. This would likely not be a comparative/helpful measure (schools draw students from different places = difficult to correlate enrollmenet based on geography).
Chapter 1	Children and Youth	Student Performance on Grade 8 Math	The test format has changed in recent years to being on the computer and the results are unreliable after this format change.
Chapter 1	Children and Youth	Student Performance on Grade 3 English	The test format has changed in recent years to being on the computer and the results are unreliable after this format change.
Chapter 1	Housing and Real Estate Affordability and Cost	Vacancy Index (Residential and Commercial)	This requires calculation by direct survey, so it would be prohibitively time consuming and expensive to collect as a part of this study.

Chapter 1	Housing and Real Estate Affordability and Cost	Median Length of Time to Complete Construction Non-Large Scale Development (From Building Permit -> Certificate of Occupancy)	There are many factors contributing to length of time to complete construction including availability of labor, materials, weather, site conditions, scale of construction project, etc. It would be extremely difficult to isolate these and attrubute them to Catskill watershed policy
Chapter 1	Housing and Real Estate Affordability and Cost	Cost Analysis of Building	Similar to above there are many factors that can contribute to cost of construction, materials, labor, energy, etc that one cannot necessary isolate and attribute to Catskill specifc conditions.
Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	# Climate Change Initiatives (e.g., Climate Action Plan Created, Mutual Aid Agreements Worked out in Case of Disaster, etc.)	1. This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CWC told CGR this could be removed because it was added to the RFP without an explicit metric attached to it. 2. Climate/environment metrics are being tracked in another category.
Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	# Cell Service Providers and Quality of Service	1. This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CWC told CGR this could be removed because it was added to the RFP without an explicit metric attached to it. 2. There would be data collection issues - how would you standardize and get information from all municipalites?
Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	Membership Numbers in Civic Organizations (e.g., Non-Profits, Service Clubs like Rotary, Lions, etc., Community Boards and Volunteer Groups, Religious Congregation Membership)	Feasbility is very low and numbers would be low and hard to compare with any real foundational reason for including.
Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	Local Election Turnout (National and Local)	Would be extremely difficult to get data at the Town level, and at the county level this metric doesn't give impactful information.
Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	# Vacant Positions in Local Government and Description of Positions (According to Town Charters)	Would be extremely difficult to get data at the Town level, and at the county level this metric doesn't give impactful information. Additionally, there are many factors that contribute to this/there are different positions in different Towns, so this would be hard to track trends or conduct comparisons.

Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	% Capacity remaining public sewer system (% Community on Public Sewer versus % on Private Sewer (Septic))	This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CGR recommended "% Capacity Remaining on public sewer system" as a stand in metric for what was included in the RFP. **A metric was added evaluating the percent capacity remaining of the different DEP and municipally owned/operated WWTFs as this data was more readily available and provides information on where capacity still remains for potential targetted investment/development strategies.**
Chapter 1	Effective Local Government, Infrastructure, and Citizen Engagement	% Capacity remaining public water system (% Community on Public Water versus % on Private Water (Well))	This was included in the RFP, but at the metrics feedback meeting on 3/27/27 between CWC and CGR, CGR recommended "% Capacity Remaining on public water system" as a stand in metric for what was included in the RFP. **A metric was added evaluating the number of community water systems in the Watershed and Control towns as well as the number of customers served; it was not possible to evaluate the percent of people being served on a private well (extremely decentralized data/not single database that tracks this) and it was not possible to evaluate the capacity remaining/percent of town population served by public water systems because data provided was not just residential but also transient commercial/business customers.**
Chapter 1	Health, Well-Being, and Public Safety	Number of Registered EMTs	Data was requested from the state through a FOIL request back in early summer 2025. CGR received multiple emails acknowledging the request, but still had received no information or date on when information would be received as of October 15, 2025. If CGR is provided the data at a later date, it can be supplied to CWC.
Chapter 1	Social Vitality and Amenities - Arts and Culture	# Public Facing Community Events (broken out by type, e.g., Art Festivals, Parades, Concerts in the Park, Holiday Celebrations, Farmers' Markets, Local Sporting Events, etc.)	Would be difficult to come up with a consistent definition and would be hard to get data. Additionally, this isn't really an indicator. See next column for description of how this information could be gathered more qualitatively
Chapter 1	Social Vitality and Amenities - Arts and Culture	Community Centers Per Capita/Proximity to	Would be difficult to come up with a consistent definition and would be hard to get data.

Chapter 1	Social Vitality and Amenities - Arts and Culture	Museums and Cultural Institutions Per Capita	Dropped from analysis because difficult to find standardized set of data from which to pull information
Chapter 1	Social Vitality and Amenities - Arts and Culture	Total # 'Third Places' (e.g., Coffee Shops, Co-Working Spaces, Bars, Local Gathering Spots) Per Capita	Dropped from analysis because difficult to find standardized set of data from which to pull information
Chapter 1	Social Vitality and Amenities - Arts and Culture	Heritage Assets Per Capita/Proximity to (Historic Places)	Information would be difficult to obtain consistently, comparison wouldn't really yield much information.
Chapter 1	Social Vitality and Amenities - Arts and Culture	Tourism Spending	Metric would be difficult to obtain information for that is comparable/helpful (multi-facted) and it would be time consuming to collect.
Chapter 1	Environment, Natural Resources, and Recreation	# of access points per acerage of publically accessible land	Decided not to complete this analysis due to feasibility and data limitation issues.
Chapter 1	Environment and Natural Resources	Weather impacts / climate events (storms, hurricanes, floods, drought, ice)	This metric was still evaluated, but it was changed slightly to focus more on federal natural disaster declarations (and the name reflects this) as a more tangible comparison methodology with better data available.
Chapter 1	Environment and Natural Resources	Quality of Conserved Areas - Assessment Score (Miles of Well-Maintained Trails per acre of conserved land, presence of vistor center facilities, quality of road conditions, presence of waste management/restroom facilities, etc.)	After attempting to establish data collection and methodology for this proposed metric, it became obvious the level of detail required was not easily available; this metric transformed into a "Quality of Conservation Area" streamlined evaluation in the report (see additional notes in rows below) because quality data that still did a similar evaluation was more readily available. This was originally proposed at the Town level and changed to the County level because of data availability.
Chapter 1	Environment and Natural Resources	Soil Quality and Erosion Rates	Soil quality is still included (but is now included in the "Quality of Conservation Area" analysis in the report; see note below) but erosion rate was removed and soil quality data was collected at the County level instead of the Town level because of a lack of readily available and quality data.

Chapter 1	Environment and Natural Resources	Wetland acreage and health	Metric wasn't fully removed, but the following changes occurred. 1. "Health" was removed because no readily available data found 2. Switched wetland acreage from Town level to County level because higher quality data was readily available. 3. Consolidated wetland acreage metric into one evalaution "Quality of Conservation Area" with several other metrics in report for streamlined evaluation.
Chapter 1	Environment and Natural Resources	EPA Environmental Score. Safe Drinking Water Access	Metric was changed to just be an assessment of drinking water quality based on EJ Index and Drinking Water Reports because this data was of higher quality and more readily available than the source proposed to use previously. This was also done at the County level instead of the Town level for the same reasons.
Chapter 1	Environment and Natural Resources	Percent days with good air quality	Metric was changed to just be an assessment of air quality because this level of data in the Watershed and rural Control counties was not found.
Chapter 1	Environment and Natural Resources	Recreational Activity Types (boating, fishing camping)	This metric transformed into an evaluation inside of the Watershed boundary (aggregated and mapped) instead of at the Town level. Control data comparison data was not readily available, so this was not evaluated. The revised metric was also moved to Chapter 3 of the report from Chapter 1 because of a similar scope item in that Chapter that discussed recreation benefits. Similar to other metrics on this list, it was determined to not exactly be an easily defined "metric".
Chapter 1	Environment and Natural Resources	Recreational Spending	Recreational spending will vary by community, so actual value of this is hard to compare across communities and the data would likely be hard to collect.
Chapter 1	Environment and Natural Resources	Outdoor Recreation by Category (conventional, supporting, other)	Will be difficult to obtain town-level data.
Chapter 1	Environment and Natural Resources	Change in Economic Activity by Recreation Category	This will require the comparison of multiple data sets that we may not have. Not a direct indicator.

Appendix C List of Focus Groups and Interviews Conducted

Interview/Focus Group	Watershed or Control	Date Conducted	Location	Notes
Chief NYC Watershed Section - NYSDOH	Watershed	4/30/2025	Virtual	
CWC Staff - Executive Director and Chief Counsel	Watershed	5/19/2025	In-person	
NYCDEP	Watershed	5/19/2025	In-person	
CWC Staff - Communications / Public Education Manager	Watershed	5/19/2025	In-person	
Delaware County Planning Department	Watershed	5/19/2025	In-person	
Coalition of Watershed Towns (CWT) Members and Delaware County Mayors	Watershed	5/19/2025	In-person	
Watershed and Non-Watershed Contractors and Engineers	Both	5/20/2025	In-person	
CWC Staff - Economic Development Director and Sr. Program Specialist	Watershed	5/20/2025	In-person	
CWC Staff - Stormwater Program Manager	Watershed	5/20/2025	In-person	
CWC Staff - Flood/Community Wastewater Manager and Flood Hazard Program Manager	Watershed	5/20/2025	In-person	
CWC Staff - Environmental Manager (Septic Maintenance, I&I, Septage Receiving)	Watershed	5/20/2025	In-person	
CWC Staff - Septic Program Manager and Sr Program Specialist	Watershed	5/20/2025	In-person	
Watershed Agricultural Council	Watershed	5/20/2025	In-person	
Town of Gilboa Town Supervisor	Watershed	6/6/2025	Virtual	
Pattern for Progress (Non-Profit Perspective)	Both	6/6/2025	Virtual	
Town of Windham Town Supervisor	Watershed	6/9/2025	Virtual	
Catskill Center	Watershed	6/10/2025	Virtual	
Ulster County Planning	Both	6/11/2025	Virtual	
Riverkeeper	Both	6/17/2025	Virtual	
Town Supervisors/Officials - Delaware County	Watershed	6/23/2025	Virtual	
Control County Economic Development and Planning Departments - Chenango, Otsego, Columbia County	Control	6/23/2025	Virtual	
Watershed County Soil and Water Districts	Watershed	6/24/2025	Virtual	
Town Supervisors/Officials - Greene County	Watershed	N/A	N/A	Did not have to schedule because most members were in the CWT focus group.
Town Supervisors/Officials - Schoharie and Sullivan County	Watershed	6/25/2025	Virtual	No participants showed up; limited responses to focus group request
Town Supervisors/Officials - Ulster County	Watershed	6/27/2025	Virtual	
Schoharie and Otsego County Tourism	Both	6/27/2025	Virtual	
Economic Development and Planning Departments - Watershed Counties	Watershed	7/1/2025	Virtual	
Watershed Business Owners	Watershed	7/7/2025	Virtual	
Watershed Counties Chambers of Commerce	Watershed	7/8/2025	Virtual	
Control Counties Chambers of Commerce	Control	N/A	N/A	No participants showed up but email answers were provided by one individual
Town of Neversink Town Supervisor	Watershed	7/9/2025	Virtual	
NYSDEC	Both	7/14/2025	Virtual	
Control Towns - Town Supervisors/Officials	Control	N/A	N/A	No responses to request for focus group

Study of Economic and Community Vitality of the West of Hudson Watershed

Introduction

The Center for Governmental Research (CGR) and partners LaBella and UrbanSense (hereinafter referred to as the 'CGR Consulting Team') are assisting the Catskill Watershed Corporation (CWC) and the NYC Department of Environmental Protection (NYCDEP) (hereinafter referred to as "Client") with a study of the community/economic vitality and the social character of the West of Hudson Watershed Region.

This study is being conducted by the CWC, NYC DEP, and other parties to assess the current condition of the West of Hudson Watershed communities and to identify and track vitality metrics that can be periodically updated to guide improvements to help with the CWC's mission statement of 'investing in the Catskills' Future' for years to come.

The goals of the study are to:

- Analyze current conditions (vitality measures and other metrics) in the West of Hudson Watershed towns in comparison to other communities in the same counties but that are not in the West of Hudson Watershed;
- Evaluate development opportunities and regulatory controls within the Watershed; and
- Explore funding availability as well as employment and recreation opportunities within the Watershed.

The Consulting Team's work will start with one-on-one and group interviews with key stakeholders to better understand the CWC's and other stakeholders' work to date, metrics that are already tracked and stakeholders have access to, as well as goals, objectives, needs, and challenges with respect to this effort.

Questions

1. Can you give us a description of your role and how long you have been serving in it?
2. How has your community changed in the last 5 years?
3. What is going well for your town and what are the biggest challenges? Do you have any proposed solutions to reducing burden or frustration?
4. What does community vitality mean to you? What matters most?
5. What topics or areas will be most important for us to focus on?
6. What role do you play working with (if applicable):
    a. The CWC?

b. NYCDEP?

c. Other stakeholders?

7. Can you tell us about medical services in the area (emergency care, mental health, specialists? How far away does someone have to drive to access these types of services?

8. **Implementation and compliance with laws:** What are some of the most common problems (or areas of non-compliance) with local laws? DEP regs? State Laws (regarding protecting the environment, waterways or watershed maintenance)?

9. In general, has this area seen an increase in storms and flooding over the past decade or so? How has that impacted the community in general? Were there damages to parks and nature-accessed areas, riverbanks or other damages or long lasting changes?

10. How has the government responded to the flooding? What resources were available? Funding sources?

11. In general, are there other areas of environmental concern that should be addressed in the Watershed? How can these concerns be addressed in a mutually beneficial manner with community vitality? Conversely, what areas of community vitality should be addressed in a way that is mutually beneficial for water quality?

12. **Implementation and Compliance with Laws and regulations:** Does your town implement any town ordinance or local (County) laws to protect property or protect the environment and watershed?

13. **Implementation and Compliance with Laws and regulations:** Do local entities issue violations?

14. Does your community collect information on the following, and would you be able to share data after this meeting?:

    a. Wastewater rates charged per property within sewer district

    b. % capacity remaining on public sewer system and % capacity remaining on public water system (or rough percentages of units on sewer versus units on septic)

    c. Local election turnout (national and local)

    d. Voter registration rate (national and local)

    e. # vacant positions in local government (paid and volunteer positions like planning boards, etc.)

f. # Public facing events hosted per year

15. Do you have any questions for us?

Appendix D Letter from a Concerned Delaware Citizen with School Aged Children

As a citizen of Delaware County with school-aged children, I am concerned about the negative impact that a high concentration of easements within Delaware County is having on school district funding through reduced student enrollment, reduced tax-based (easement land can never be developed), and a distorted calculation under the New York State (NYS) Foundation Aid formula. I understand that you are doing a review of the NYC programs, and I would love to see an evaluation of how easements impact local schools, and specifically the Foundation Aid formula as part of this.

The Foundation Aid formula, adopted in 2007 following the *Campaign for Fiscal Equity* litigation, was designed to ensure that all public schools in New York receive sufficient state funding to provide a sound basic education, particularly in districts with limited local fiscal capacity and higher student need.

The formula considers multiple factors, including:

- Pupil need (e.g., English Language Learners, students with disabilities, poverty levels)
- Local fiscal capacity (based on property wealth and income)
- Enrollment figures (Average Daily Membership or ADM)

However, districts experiencing suppressed population growth and declining enrollment due to local land use restrictions—such as conservation or utility easements—are disadvantaged. This is especially problematic where the community's income or property values suggest a greater capacity to fund education locally, despite practical constraints on housing and resident population.

Easements—particularly conservation, agricultural, or utility easements—legally restrict land development and residential construction. In Delaware County, a disproportionate percentage of land is subject to such easements, which has produced the following effects:

1. Restricted Housing Growth: Easements prevent residential expansion, deterring new families from moving into the area.
2. Declining or Flat Enrollment: With limited new housing, student enrollment stagnates or declines, even as surrounding counties see growth.
3. Demographic Skewing: The limited housing inflates property values and reduces affordability, driving younger families to neighboring areas and aging the population.
4. Underrepresentation in Funding Metrics: The Foundation Aid formula's reliance on enrollment penalizes districts with artificially suppressed student counts.

The interaction of enrollment-based and wealth-based calculations in the Foundation Aid formula means that school districts like ours may be doubly disadvantaged:

- Low Student Count Reduces Aid Base: Fewer students means a smaller base aid amount.

- **High Property Values Inflate Local Effort Expectation**: Easements inflate per-property wealth, increasing the presumed local ability to fund education, even when tax revenue is limited by restricted development.

This leads to:

- **Underfunding Relative to Actual Need**
- **Difficulty Maintaining Programs and Services**
- **Greater Reliance on Local Taxes from a Narrow Base**

The prevalence of easements in Delaware has a demonstrable and compounding effect on school funding, primarily through their suppression of enrollment growth and distortion of local wealth indicators. Unless and until the NYS Foundation Aid formula is revised to recognize the unique structural limitations imposed by easements, our district will continue to receive funding that fails to reflect our students' needs and our fiscal reality.

How Easements Impact School Funding in Delaware County

The Foundation Aid Formula Connection

At the highest level, the Foundation Aid formula simply multiplies the number of pupils in a given district by the level of funding necessary to achieve funding adequacy in that district. The formula calculates the number of pupils by estimating total current-year enrollment Understanding Foundation Aid: How Public School Funding Works in New York State - Fiscal Policy Institute. This direct relationship between enrollment and funding means that declining student populations immediately translate to reduced state aid.

The formula, which the state has used since the 2007-2008 school year, draws from about a dozen data points — including regional salaries, census poverty rates, and student attendance, as well as expected district-levied property taxes New York FocusThe 74 Million. This creates a dual impact where easements affect both enrollment-based funding and property tax revenue.

The Easement-Enrollment Connection

Easements in Delaware County create a cascading effect on school enrollment through several mechanisms:

Property Tax Revenue Reduction: When land is placed under conservation easements, it typically reduces the property's assessed value significantly. This reduces the local property tax base that supports schools, forcing districts to either raise tax rates on remaining properties or reduce services and programs.

Population Decline: Conservation easements often restrict development, limiting new housing construction and family formation opportunities. This prevents young families from moving into the area, directly reducing potential student enrollment.

Economic Displacement: As working lands are converted to conservation easements, local employment opportunities decrease, particularly in agriculture and forestry sectors. This economic pressure forces families with school-age children to relocate to areas with better job prospects.

Foundation Aid Formula Vulnerabilities

The current Foundation Aid formula compounds these problems because:

1. **Enrollment-Based Calculation**: Since funding is directly tied to student count, any decline in enrollment immediately reduces state aid, creating a downward spiral.

2. **Property Tax Expectations**: The formula includes expected district-levied property taxes New York FocusThe 74 Million as a component, meaning reduced property values from easements can affect the state's calculation of local contribution capacity.

3. **Outdated Formula**: However, the formula is outdated and the state is currently New York FocusThe 74 Million reviewing it, suggesting the current system may not adequately account for modern challenges like conservation easements.

Research Limitations and Recommendations

While I found comprehensive information about the Foundation Aid formula structure, specific research quantifying the easement impact on Delaware County schools is limited in current academic literature. The Rockefeller Institute is collecting feedback on and examining New York State's Foundation Aid education funding formula Foundation Aid Study | Rockefeller Institute of Government, which suggests ongoing study of these systemic issues.

In the Walton Central School District, where my children attend, we receive around $13,000 in state aide per student. The presences of easements prevents new developments and growth which is directly related to to how much money our school receives.

Current Status of the Foundation Aid Formula

The Foundation Aid formula has undergone significant changes recently, but these changes do not specifically address conservation easements and may actually worsen the situation for Delaware County:

Recent Formula Updates

Despite legal mandates, Foundation Aid was fully funded for the first time during the 2024-25 school year — meaning that many schools previously didn't receive the full amounts determined by the formula Real Property Tax Department - Delaware County. While this represents progress in funding adequacy, real State school funding is not set to return to its 2010 level until school year 2026, as inflation School district compliance - Delaware County continues to erode purchasing power.

Why the Updated Formula May Make Things Worse for Delaware County

1. No Easement Consideration: The current formula updates focus primarily on full funding implementation rather than structural changes to address conservation easements. A Rockefeller Institute report on how to revise Foundation Aid has prompted mixed reactions from advocates and lawmakers. The nearly two-decade-old formula sends money to school districts Tax Rates - Delaware County, suggesting that fundamental structural issues remain unaddressed.

2. Continued Enrollment Dependence: The formula still fundamentally relies on student enrollment counts, meaning that conservation easements that limit population growth continue to directly reduce funding. Rural districts like those in Delaware County face a double penalty: reduced property tax base from easements and lower enrollment-based state aid.

3. Formula Adjustments May Favor Urban Areas: "A formula once considered among the most progressive in the nation is now being dismantled," one advocacy group said Real Property Tax Services FAQs - Delaware County regarding recent tweaks. While this specifically refers to NYC receiving less funding, it suggests the formula adjustments may be creating new inequities that could disadvantage rural districts.

The Worsening Situation for Delaware County

The updated formula likely exacerbates Delaware County's easement-related challenges because:

Full Funding Pressure: With the formula now fully funded, there's increased scrutiny on enrollment numbers and property values. Districts with declining enrollment due to easement-related population constraints face more immediate funding cuts.

Inflation Impact: Nevertheless, real State school funding is not set to return to its 2010 level until school year 2026, as inflation School district compliance - Delaware County continues to affect purchasing power. This means that even with full formula funding, districts dealing with easement-related revenue losses have less real purchasing power than before.

Lack of Rural Considerations: The ongoing formula review process appears focused on urban-rural equity broadly but does not specifically address the unique challenges that conservation easements create for rural property tax bases and population stability.

Recommendations

The updated Foundation Aid formula does not account for conservation easements and may actually worsen Delaware County's situation by maintaining enrollment-based funding while not addressing the underlying property tax and population dynamics that easements create. The state would need to develop specific provisions or supplemental funding mechanisms to address the intersection of conservation policy and school funding in rural areas.

For Delaware County specifically, advocacy for formula modifications that account for conservation easements or the development of separate state aid categories for districts significantly impacted by conservation policies would be necessary to address this growing challenge.