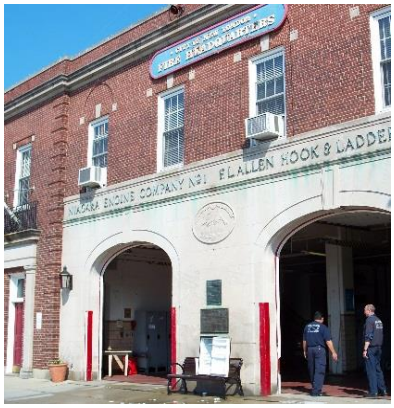
Southeastern Connecticut Council of Governments

Regional Plan of Conservation and Development

2017








REGIONAL PLAN OF CONSERVATION AND DEVELOPMENT

Southeastern Connecticut Council of Governments

5 Connecticut Avenue, Norwich, CT 06360

Certification of Adoption

This plan was adopted at a legally convened meeting of the Southeastern Connecticut Council of Governments on November 15, 2017.

Ron McDaniel, Chairman

The preparation of this document was financed in part by grants from the U.S. Department of Transportation, Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut Office of Policy and Management, and by contributions from the member municipalities of the Southeastern Connecticut Council of Governments. The opinions, findings, and conclusions expressed herein are those of the Southeastern Connecticut Council of Governments and do not necessarily reflect the official views or policies of the funding agencies.

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Rev. 10/13/17 (future land use map)

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Executive Summary

The Southeastern Connecticut Council of Governments (SCCOG) is a public agency formed in 1992 to provide a basis for intergovernmental cooperation in dealing with a wide range of issues facing southeastern Connecticut. Its predecessor agency, the Southeastern Connecticut Regional Planning Agency (SCRPA), was created in 1961. SCCOG's membership includes 22 municipalities as diverse in size and character as the City of Norwich (population 40,378), Town of Franklin (population 1,993), and Stonington Borough (population 1,066).

A Regional Plan of Conservation and Development is required by state statute to be prepared at least every ten years. The Plan serves as a blueprint for the Council of Governments and its member municipalities to follow in working together "to promote with the greatest efficiency and economy the coordinated development of its area of operation and the general welfare and prosperity of its people" (CGS 8-35a). The Regional Plan identifies shared goals for maintaining and expanding the region's infrastructure, promoting economic growth, meeting the housing needs of the region's residents, and protecting the health of the natural environment. A Future Land Use Map illustrates land use goals for the region, providing guidance to member municipalities and to SCCOG staff.

Some of the challenges that the southeastern Connecticut region faces are an aging population that will reduce the available workforce and require additional public services, a continued over-reliance on a few key industries, and a pattern of dispersed development that makes it difficult to expand public transportation options. The Plan identifies strategies that the Council of Governments, its member municipalities, and other partner organizations can implement to support regional goals, either working as individual municipalities or as part of collaborative initiatives coordinated by the Southeastern Connecticut Council of Governments. This Executive Summary includes the key findings and recommendations of the Plan.

Figure 1. Member Municipalities of the Southeastern Connecticut Council of Governments.

Economy and Fiscal Health

Conditions and Trends:

Employment in the region continues to be concentrated in a few major industries: casino gaming, defense manufacturing, and defense. As baby boomers enter retirement, the region may face a shortage of workers.

The fiscal health of the region's cities and towns is heavily impacted by dependence on property tax revenues. While urban communities are challenged to meet the needs of low-income residents, rural and suburban communities are often heavily-dependent on home-owners for property tax revenue.

Goals:

A diverse economy with both large and small, established and new businesses

Efficient government that provides cost-effective services

Growing industries that are committed to the region

Expanded tourism that sustains a year-round tourism industry

Implementation Strategies:

SCCOG	Increase capacity of municipalities to make use of available tools such as brownfields redevelopment programs and tax increment financing. Review municipal development goals and regulations to identify synergies or potential conflicts with major employers. Encourage strategic capital investments that deliver a high rate of return and are consistent with regional and state goals and priorities. Enable the regional provision of services and the sharing of equipment and services between municipalities.
Municipalities	Develop reuse plans for underutilized/deteriorating properties. Adopt zoning that allows redevelopment or changes of use. Streamline the zoning approvals and permitting process to support investment. Develop "ready-to-go" business sites. Develop regulations to accommodate home-based businesses.
Partners	Continue workforce training programs in manufacturing and healthcare. Develop incubator space for several different types of industries, including technology industries related to Electric Boat. Develop year-round tourist attractions. Install signage to increase awareness of region's tourism assets. Support efforts to link local agricultural production with local restaurants and markets. Develop marketing partnerships between casinos, tourism district, and other attractions. Develop small-business assistance guide. Make available in several languages for immigrant entrepreneurs.

Housing

Conditions and Trends:

More and more of the region's households struggle to find housing that is affordable, with half of all renters now paying greater than 30% of their income towards housing. Alternatives to single-family housing are hard to find in the region's rural and suburban communities, where higher-cost single-family homes are the norm. A lack of smaller, lower-cost housing will become a larger problem as baby boomers look to downsize and younger households seek affordable housing.

Goal:

A **variety of housing options** that includes single-family, multi-family, owner-occupied and rental housing, and that meets the needs of all residents, particularly seniors, millennials, and low-income households

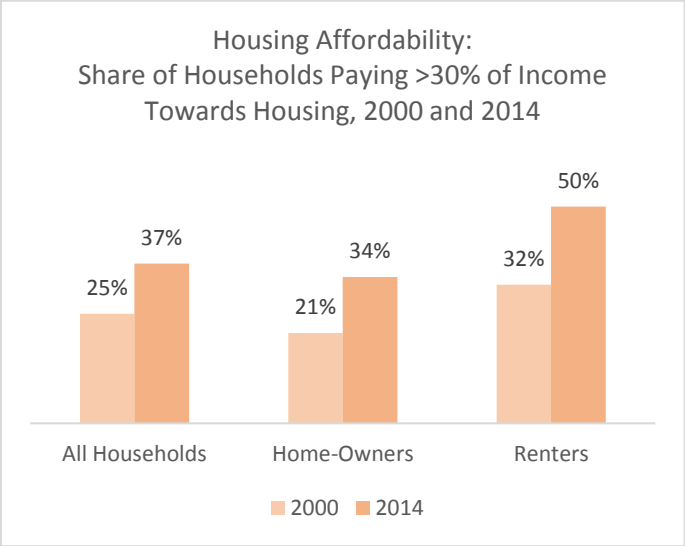


Figure 2. Share of Households Living in Unaffordable Housing, 2000 and 2014. Source: 2000 U.S. Census, 2014 5-Year American Community Survey.

Implementation Strategies:

SCCOG	Help towns to streamline municipal permitting processes, potentially through adoption of web-based permitting systems.
Municipalities	Adopt regulations to allow accessory apartments in single-family homes. Adopt regulations to allow by-right development of multifamily and infill housing. Develop regulations that facilitate the subdivision of large older homes that cannot be maintained as single-family homes. Preserve existing "naturally occurring" affordable housing: Adopt blight ordinances and leverage resources for neighborhood and historic preservation.
Partners	Publicize housing development successes. Prepare regional housing market analysis to identify market demand for different types of housing. Educate policy-makers on economic value of housing. Provide training on diversifying housing supply.

Transportation

Conditions and Trends:

Southeastern Connecticut's complex transportation systems includes roads and highways, public and private bus services, commuter and long-distance rail, freight rail, ferries, and airports. The majority of the region's residents and workers rely on private automobiles, but 1 in 5 residents commutes via carpools walking, transit, or some other means.

The distribution of homes, job centers, and services makes it difficult to provide quality public transportation alternatives for residents who cannot drive or lack access to a vehicle. As the region's residents age, transportation in car-dependent locations will become a greater challenge.

Goals:

Transit that meets the needs of the region, especially businesses, low-income workers and aging residents

Complete streets that encourage transit use, biking, and walking

Coordinated transportation that makes use of new technologies to improve mobility

Safety and reliability that meets the future needs of the region and can withstand potential natural hazards

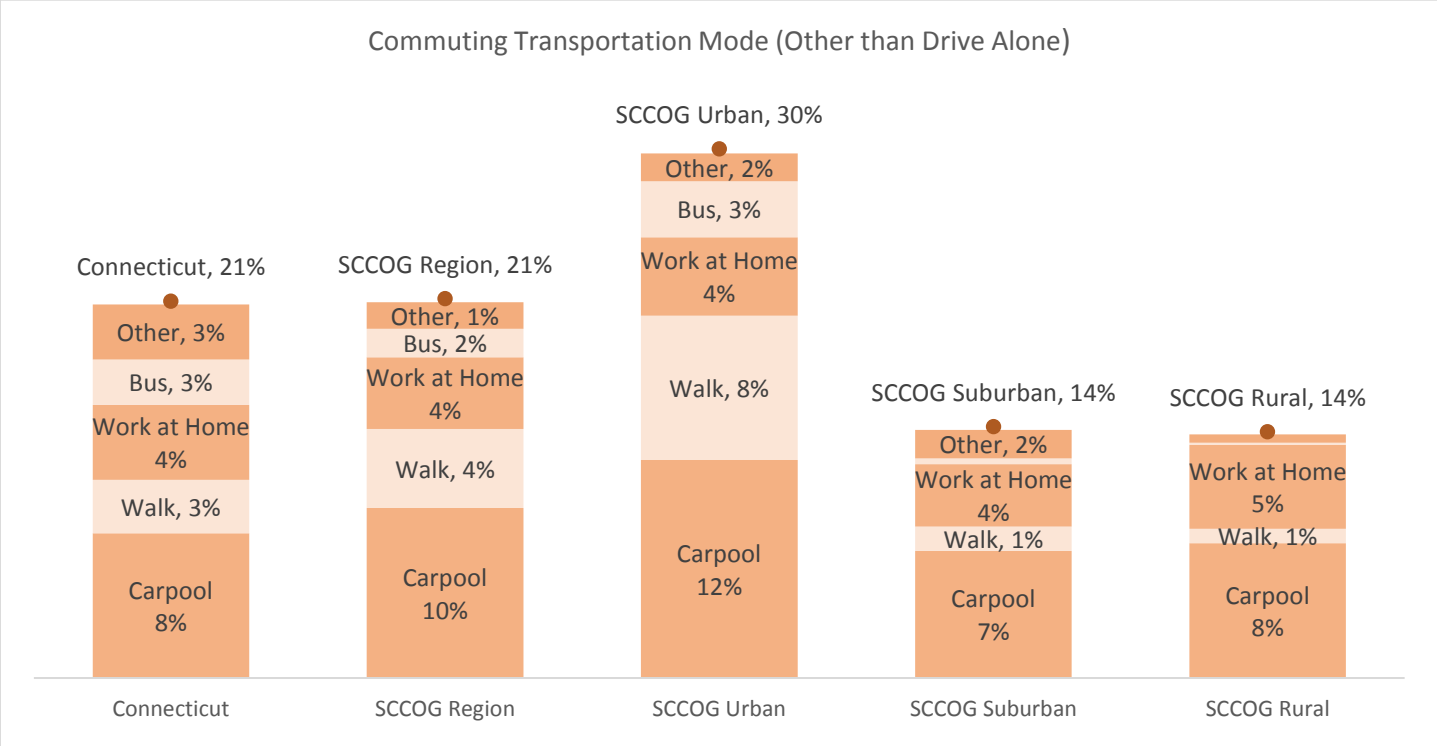


Figure 3. Mode of Transportation to Work. Source: 2014 5-Year American Community Survey. "Other" modes include rail, bicycle, and ferry each totaling less than 1% of commuters.

Implementation Strategies:

SCCOG	Prioritize the expansion and improvement of sidewalks and bike facilities. Create bike routes connecting neighborhood centers, parks, along or parallel to corridors (including rails w/trails). Implement complete streets strategies to build safety, sense of place. Coordinate public and private providers of transit service (SEAT, Windham Regional Transit District, RIPTA. 9 Town Transit, Pfizer, Electric Boat, Eastern CT State University, Casinos). Produce coordinated map/schedule information. Implement TDM and TSM (Transportation Demand Management, Transportation Systems Management). Develop performance measures that will make region competitive for funding. Assess new technology transportation trends as part of the transportation planning process.
Municipalities	Encourage higher-density residential development and employment sites along transit-served corridors/station areas. Manage parking: municipal parking commissions or staff to calibrate parking regulations, manage parking access.
Partners	Implement bus route alignment changes as recommended in 2015 SEAT Bus Study Cost Neutral Plan B, reallocating resources from low-ridership routes to increase frequencies in high-demand corridors. Install signage & shelters along bus routes and address pedestrian barriers. Publicize real-time arrival info & market transit service opportunities to attract additional ridership. Train local traffic authorities and public works officials in context-sensitive road design. Develop regional and local councils on aging to coordinate solutions for senior mobility. Pursue more frequent Shoreline East service for New London and evaluate opportunities for additional rail service locations, including commuter service to Westerly, RI. Continue to make safer and expand the capacity of the regional highway network as recommended in the Regional Transportation Plan (e.g. Route 85, I-95). Develop plan to protect major transportation infrastructure from interruptions/damage by storms and sea level rise (particularly coastal Amtrak tracks).

Utilities

Conditions and Trends:

The capacity of rural and suburban areas to accommodate dense housing and commercial activity is limited where these areas lack access to public water supply, wastewater treatment, and natural gas. The region can do more to diversify electricity generation sources and make utility infrastructure more resilient to disruptions.

Goals:

Reliable service that meets the future needs of the region and can withstand potential natural hazards

Clean and low-impact infrastructure that minimizes negative impacts to neighborhoods and the natural environment

Detention Basin at Hole-In-The-Wall Outdoor Stormwater Classroom, Niantic. Source: Town of East Lyme.

Implementation Strategies:

SCCOG	Support the use of small community on-site wastewater treatment systems (including by advocating for a clearer and more stream-lined state permitting process).
Municipalities	Evaluate the potential benefits of municipal/community microgrids and pursue where appropriate. A microgrid is a local energy grid that can disconnect and operate on its own in case of a power outage and powers vital facilities until electricity can be restored.
Partners	Identify upgrades necessary to stormwater systems due to increased frequency of flood events. Protect wastewater treatment, energy generation, and other sites from flooding risks. Maintain and expand support program for municipalities responsible for surface water quality improvements under MS4 Municipal Stormwater Systems permit program. Support the development of regional and state water plans to ensure continued availability of adequate water.

Agriculture

Conditions and Trends:

Agriculture is a vital part of the region's history, regional identity, and economy. Agriculture in the region is diversifying, with more small farms, direct-to-consumer operations, greenhouse operations, and aquaculture than in the past. While the number of farms in the region has grown 40% over a ten-year period, acreage farmed increased by only 10%, and more than half of farmers are 60 or older

Goal:

A **thriving agricultural industry** that provides employment and adds to the region's sense of place while providing good stewardship of natural resources

New London Farmers Market
Source: Field of Greens Farmers Markets

Implementation Strategies:

SCCOG	Develop a regional agricultural council. Identify missing infrastructure needs and develop solutions (e.g. USDA-approved slaughterhouses, incubator spaces, shared processing facilities, water-adjacent aquaculture facilities, farm apprenticeships, distribution networks).
Municipalities	Manage surface water runoff to reduce non-point source water pollution to minimize negative impacts on aquaculture. Implement changes to local ordinances that expand allowed agricultural uses. Support the creation of local agricultural commissions to advocate for and implement policies that promote agriculture locally. Include priorities for farmland preservation in municipal plans of conservation and development. Pursue the acquisition of farmland and/or agricultural easements. Develop regulations for renewable energy projects on agricultural lands that appropriately balance goals for preserving agriculture and promoting renewable energy.
Partners	Develop agricultural tourism events and resources.

Historic Preservation

Conditions and Trends:

The region's historic villages and downtowns are assets that contribute to each community's unique sense of identity. The age of the region's structures also means challenges in maintaining properties and retrofitting them for today's residents and businesses. One quarter of homes in southeastern Connecticut were built before 1940, with the share higher in places such as New London (52%), Norwich (39%), and Sprague (43%).

Goals:

Investment and maintenance that prevents demolition by neglect and preventable damage from hazards such as storms or fire

Tourism and economic development that leverages historic buildings and neighborhoods for economic growth

Downtown Willimantic. Source: Google Street View.

Implementation Strategies:

SCCOG	Identify additional neighborhoods/properties eligible for historic preservation funding and to support property resilience.
Municipalities	Adopt demolition delay ordinances for historic properties. Develop regulations that facilitate the re-use of existing historic properties that cannot be maintained with current allowed uses.

Open Space and Natural Resources

Conditions and Trends:

Protecting natural resources is critical to the health of the region's economy and quality of life. The region's residents rely on groundwater wells and aquifers for drinking water. The region's tourism industry depends on clean rivers and oceans for fishing and swimming. Both coastal and inland habitats are home to flora and fauna that include over 300 species that are endangered, threatened, or of special concern.

A portion of the Air Line State Park Trail in Lebanon. Source: Wikimedia Commons Author Pi.1415926535.

Goals:

Connected parks and open space that support recreation, wildlife, and ecological functions

Public access to waterfront along Long Island Sound, the Thames River, and other waterbodies

Clean water resources that are protected from contamination or overuse

Implementation Strategies:

SCCOG	Assist member municipalities in prioritizing open space for acquisition and developing natural resource protection regulations and policies Work with land trusts to preserve priority lands.
Municipalities	Identify and prioritize conservation of land that would connect existing preserved open spaces to improve ecological functions. Create bicycle/pedestrian connections between park spaces to improve access to parks and to develop them as recreation tourism assets. Require public access easements for waterfront development. Develop local capacity to comply with MS4 stormwater management regulations. Encourage the development of clustered housing and Low Impact Development (LID) to preserve natural resources.

Resilience

Conditions and Trends:

Threats to the region include hurricanes, winter storms, and man-made crises. While the region is less vulnerable to sea level rise than many other coastal locations, regionally-significant neighborhoods such as downtown New London and Mystic will experience greater flooding as sea levels rise and severe storms become more frequent. The region's natural habitats are also vulnerable to damage as changes in temperature and water levels disrupt natural processes that depend on predictable environmental conditions.

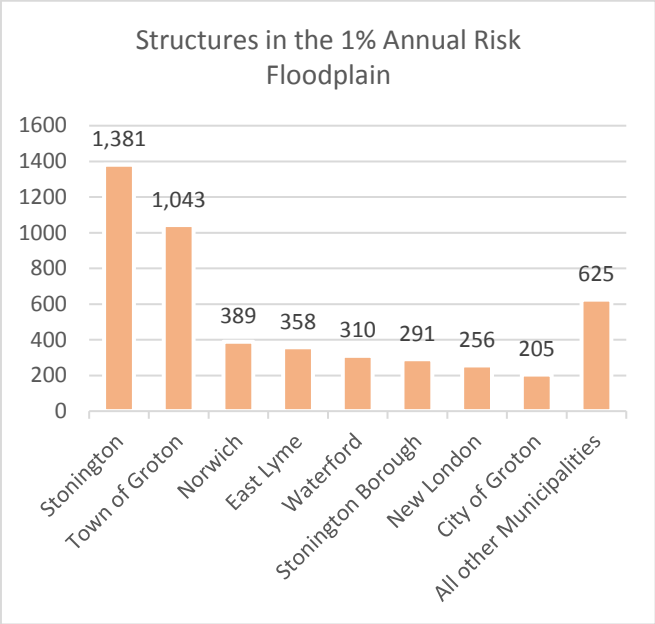


Figure 4. Structures in the 1% Annual Risk Floodplain. Source: SCCOG Multi-Jurisdictional Hazard Mitigation Plan Update, 2012. Data from Lebanon and Windham is excluded because these towns were not yet members of SCCOG.

Goals:

Resilient homes and businesses that can withstand storms and other hazards with minimal recovery time

Resilient ecosystems that adapt to a changing climate while maintaining natural function

Implementation Strategies:

SCCOG	Develop data for use by region's towns that identifies areas of future risk. Develop plan for near- and mid-term actions to adapt to effects of climate change.
Municipalities	Facilitate elevation of at-risk properties by re-calibrating zoning regulation height limits. Discourage new development in flood-prone areas.

Local Capacity and Participation

Conditions and Trends:

Connecticut's structure of government assigns the responsibility of planning and zoning to municipal planning and zoning commissioners and their staff. This structure of government depends on the availability of skilled and knowledgeable leaders at the local level and on an engaged citizenry. While the region's twenty-two municipalities each govern themselves independently, there are opportunities to share resources and expertise.

Decreasing state aid may lead to an increased need for cost and service sharing agreements among cities and towns.

Goals:

An **informed and engaged public** that plays a role in developing and implementing local projects and policies

Municipal/regional partnerships that support collaborations that lead to better outcomes and efficiencies

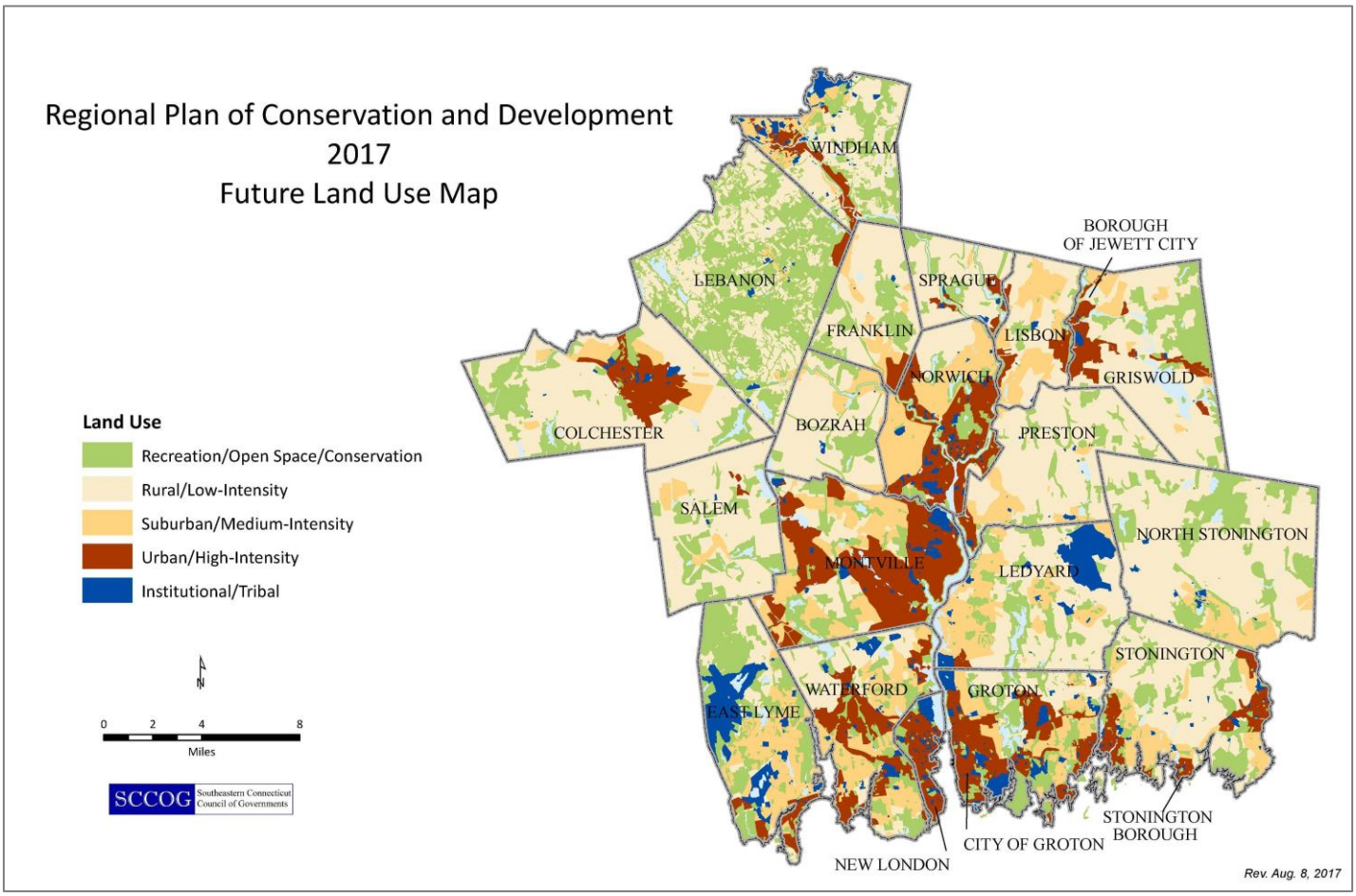
SCCOG Public Information Session at Windham Town Hall.

Implementation Strategies:

SCCOG	Share best practices among municipal and SCCOG staff through system such as quarterly brown bag lunches or issue-based workshops. Share municipal best practices at COG meetings.
Municipalities	Increase diversity of residents serving on municipal regulatory commissions (by characteristics such as age, race, and income level).

Future Land Use Plan

The Future Land Use Plan illustrates a vision for the development and use of land across the region. High-intensity or urban uses are concentrated along the coastline of Long Island Sound and along both sides of the Thames River (12% of the region's land area). Proposed low-intensity development and conservation lands comprise 70% of the region's total area and 92% of the region's six rural municipalities. Even within the region's four urban municipalities, low-intensity development or open space is proposed for 45% of the total land area. A larger version of the below map is included as Figure 95.



INTRODUCTION




Norwich Townhouses; Snow in New London, On the Road to Foxwoods, The Ledges Apartments in Groton
Source: All photos SCCOG except the Ledges, apartments.com; New London Snowstorm, Flickr user Amanda Watson.

Connecticut General Statute Chapter 126, Section 8-35a requires that every ten years, each regional council of governments shall prepare a plan of conservation and development "designed to promote with the greatest efficiency and economy the coordinated development of its area of operation and the general welfare and prosperity of its people."

This 2017 Regional Plan of Conservation and Development for southeastern Connecticut includes a review of physical, social, economic, and governmental conditions that show how southeastern Connecticut is a region with unique assets and that demonstrate the challenges facing the region's residents, businesses, and governmental bodies. The Plan presents information about how the region's population is expected to grow and change over the coming decades, and how demographic and economic trends will impact the region's workforce. The Plan provides an overview of the region's physical conditions, including its transportation system, utility infrastructure, and natural resources; and includes information on how the impacts of climate change are expected to stress southeastern Connecticut's neighborhoods and public infrastructure.

The final chapters of the Plan present goals for managing and investing in the region's infrastructure, promoting economic growth, meeting the needs of the region's residents, and protecting the health of the natural environment. The Plan includes recommendations for how the Southeastern Connecticut Council of Governments (SCCOG), its member municipalities, and partner organizations can work together to accomplish shared goals.

The process of developing the Plan included the following:

- An initial public workshop in 2015 to identify perceived issues, opportunities, and threats that should be addressed in the Plan
- Analysis of data from the U.S. Census and other sources to identify trends and areas of change since the 2007 Regional Plan
- Review of existing regional and local plans of conservation and development, transportation, and other relevant subjects in order to identify shared areas of concern and recommendations for future action
- Briefings and discussions with members of SCCOG's Regional Plan of Conservation and Development Steering Committee, which is comprised of municipal chief elected officials (mayors and first selectmen) as well as members of SCCOG's Regional Planning Commission, which represents the region's municipal planning and zoning commissions
- Briefings and discussions with members of SCCOG's Regional Planning Commission

- Interactive workshops with municipal planners from SCCOG's member municipalities
- A meeting on the Plan with economic development professionals
- Four public workshops in early 2017 to solicit feedback and comments on the draft Plan
- A public hearing on April 3, 2017.

In addition to the above activities carried out specifically for the purpose of developing the Plan, SCCOG staff benefitted from participating in several concurrent planning initiatives being undertaken by other organizations, including:

- *Comprehensive Economic Development Strategy:* Southeastern Connecticut Enterprise Region (seCTer)
- *Regional Resilience Strategy*: The Nature Conservancy
- *Community Health Improvement Plan:* L&M Healthcare, Ledge Light Health District, and the Southeastern Connecticut Health Improvement Collaborative Steering Committee
- *Water Supply Assessment:* Eastern Connecticut Water Utility Coordinating Committee (WUCC)
- *Freight planning:* New York Metropolitan Transportation Council (NYMTC), Connecticut Department of transportation (CT DOT) and other councils of governments in Connecticut.

About the Southeastern Connecticut Council of Governments

The Southeastern Connecticut Council of Governments (SCCOG) is a public agency formed in 1992 to provide a basis for intergovernmental cooperation in dealing with a wide range of issues facing southeastern Connecticut. Its predecessor agency, the Southeastern Connecticut Regional Planning Agency (SCRPA), was created in 1961. SCCOG's current membership is comprised of 22 municipalities and includes two federally-recognized Native American tribes as non-voting affiliate members. The Council operates under the provisions of Chapter 50, Sections 4-124i through 4-124p of the Connecticut General Statutes. Duties assigned to councils of government include drafting a plan of conservation and development for the region; assisting municipalities within the region, as well as state and other public and private agencies; and performing a variety of advisory review functions. Under federal transportation law, SCCOG also functions as the region's Metropolitan Planning Organization (MPO), responsible for coordinating transportation planning in southeastern Connecticut.

Southeastern Connecticut Today

As previously noted, the Southeastern Connecticut Council of Governments includes 22 municipal members, including three cities, 17 towns and two boroughs. Major assets of regional importance within the SCCOG region include Naval Submarine Base New London, the second- and third-largest casinos in the United States, and a landscape that includes dense forests, village centers, historic small cities, marinas, and sandy coastlines. The current SCCOG region dates to 2014, when the Council welcomed new members Windham and Lebanon and former SCCOG member Voluntown joined the Northeastern Connecticut Council of Governments as part of a state-mandated consolidation of councils of governments.

Population Growth and Distribution

Southeastern Connecticut's population has reached 286,786 as of the most recent census estimate in 2014 (Table 1). The populations of the City of Groton, Jewett City, and Stonington Borough are reported in Table 1 for those municipalities but are also counted as part of the populations of the Towns of Groton, Griswold, and Stonington, larger municipalities of which they are a part. For reasons of data availability, for the majority of this document the region will be described as a 19-municipality region in which these three smaller municipal geographies are sub-components of their larger parent municipalities unless specifically listed separately. Unless otherwise noted, all data reported for the southeastern Connecticut region includes data from all municipalities that are currently members of the Southeastern Connecticut Council of Governments.

Southeastern Connecticut's residents live in a diverse region, with nearly half (46%) living in one of four urban communities. Another nearly half (44%) are residents of the region's nine suburban communities. Only 9% of the region lives in one of its six rural communities. Throughout this report, urban municipalities are defined as those with population densities of 900 persons per square mile or higher. Suburban towns have densities of

Population of Southeastern Connecticut		
Region		286,786
Share by Community Type		
Urban	133,321	46%
Suburban	127,323	44%
Rural	26,142	9%
Municipality	Community Type	2014 Population
Bozrah	Rural	2,631
Colchester	Suburban	16,143
East Lyme	Suburban	19,118
Franklin	Rural	1,993
Griswold	Suburban	11,952
Groton (City)	part of Town of Groton	9,348
Groton (Town)	Urban	40,136
Jewett City	Part of Griswold	3,488
Lebanon	Rural	7,314
Ledyard	Suburban	15,090
Lisbon	Suburban	4,340
Montville	Suburban	19,649
New London	Urban	27,536
North Stonington	Rural	5,293
Norwich	Urban	40,378
Preston	Rural	4,735
Salem	Rural	4,176
Sprague	Suburban	2,993
Stonington	Suburban	18,539
Stonington Borough	part of Stonington	1,066
Waterford	Suburban	19,499
Windham	Urban	25,271

Table 1. Population of Southeastern Connecticut Region and Member Municipalities. Source: U.S. Census 2014 Five-Year American Community Survey.

200 to 899 persons per square mile. Rural towns have under 200 persons per square mile. There is considerable variation in residential density within each town, with historic village centers or downtowns often surrounded by lower-density suburban development (Figure 5).

The equilibrium between urban and suburban residents follows a long period starting in the mid-nineteenth century when the region's cities grew faster than the rest of the region (Figure 6). The whaling industry and industrial revolution valued southeastern Connecticut's proximity to the water and its excellent port and rail connections to the rest of the northeast. In the post-World-War-II era, urban growth remained strong due to defense spending, and suburban growth dramatically increased. Urban growth has been negative or slow since 1980, with a slight increase of 7% from 2000-2010. High rates of suburban and rural growth that began in the Post-World-War-II era peaked in the 1960s before declining from 1980 onward. Growth has been relatively slow region-wide since the 1980s. From 2000 to 2010, the region grew 6.2% to 286,711 people. This was faster than the state's growth rate of 4.9%, which was only second to New Hampshire's 6.5% rate of growth among the six New England states. Figure 7 shows change in population for each municipality in southeastern Connecticut from 1950 on.

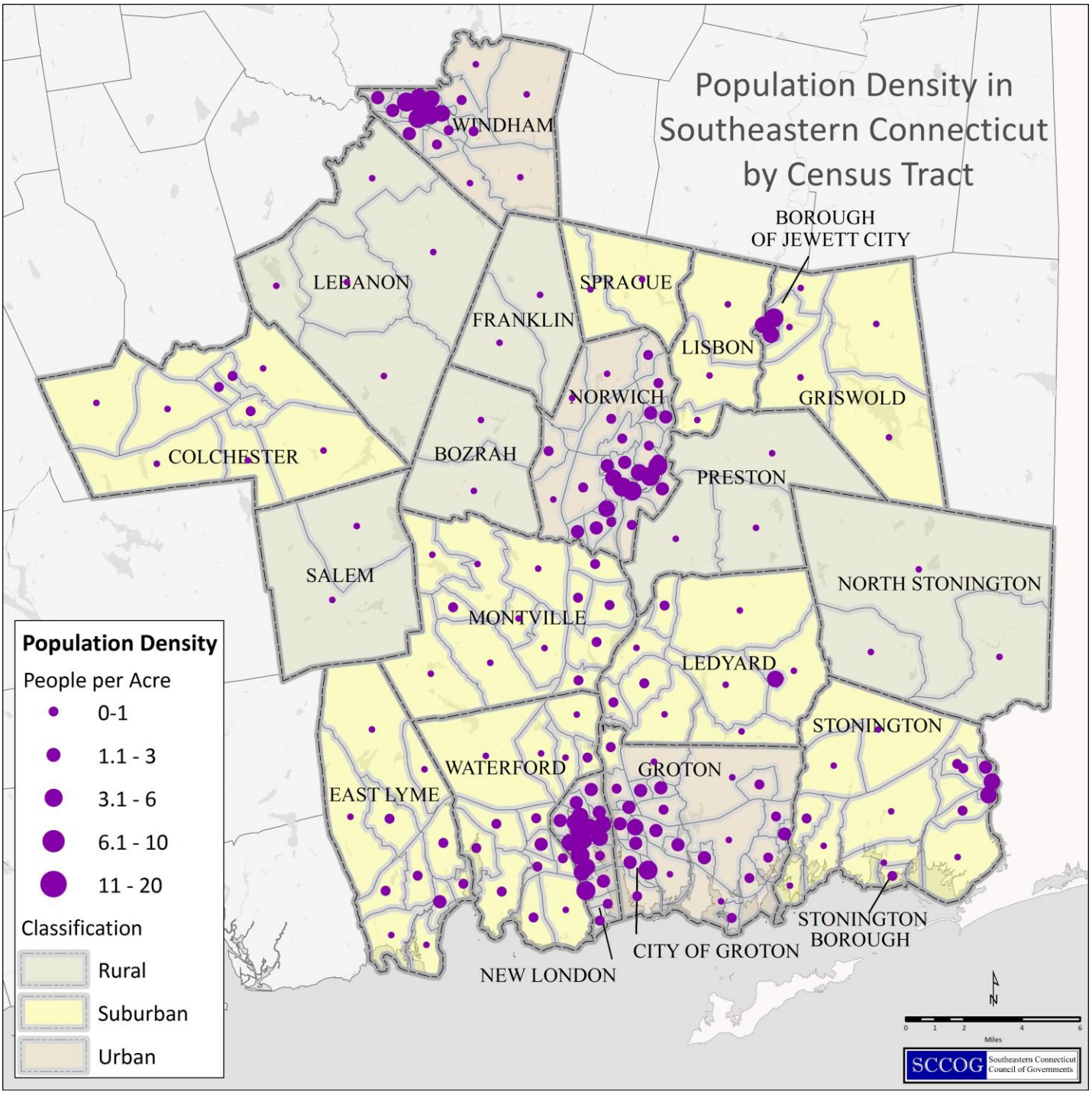


Figure 5. Population Density in Southeastern Connecticut by Census Tract.
Source: 2010 U.S. Census.

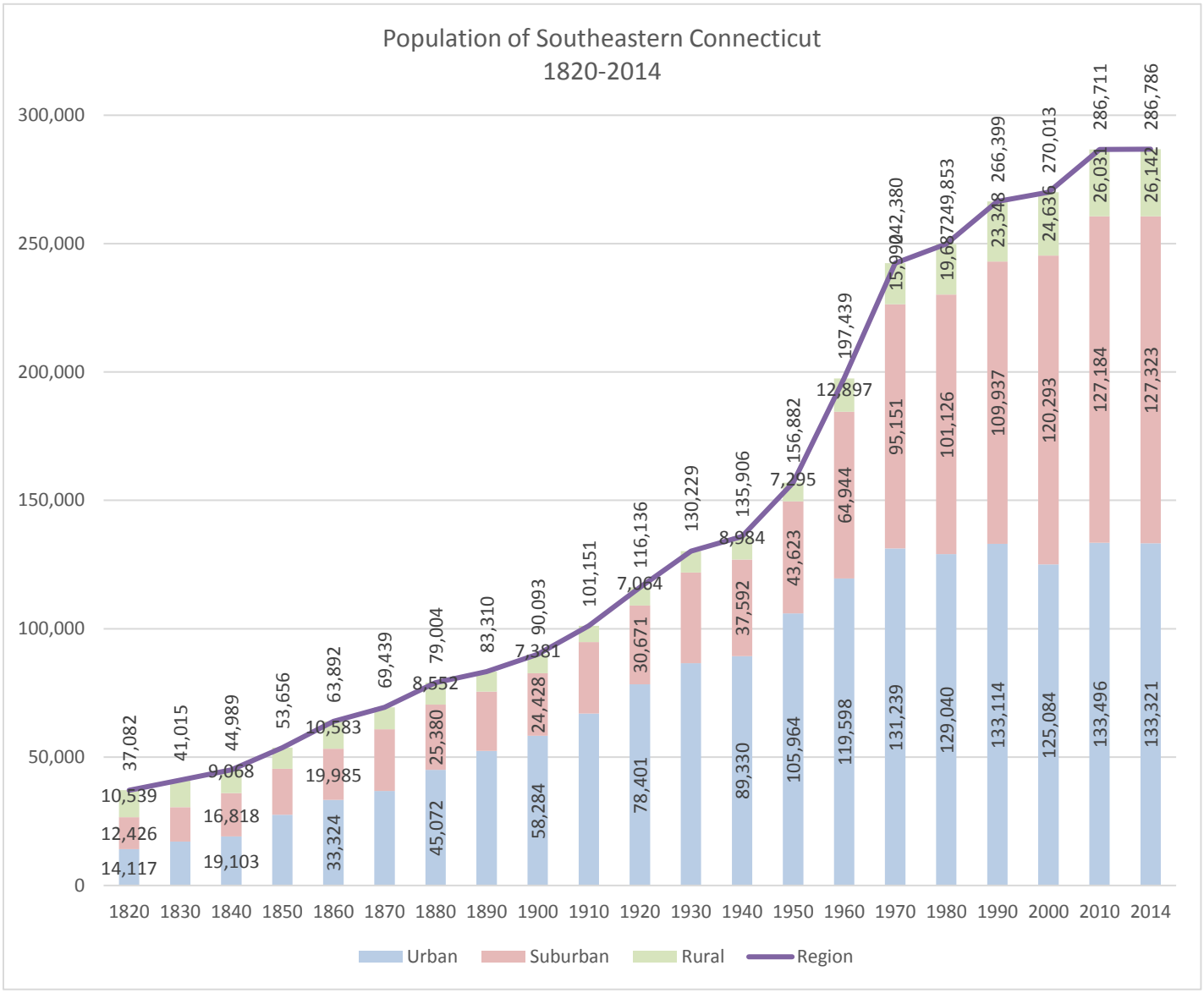


Figure 6. Population of Southeastern Connecticut, 1820-2014.
Source: U.S. Decennial Census and American Community Survey 5-Year Estimate.

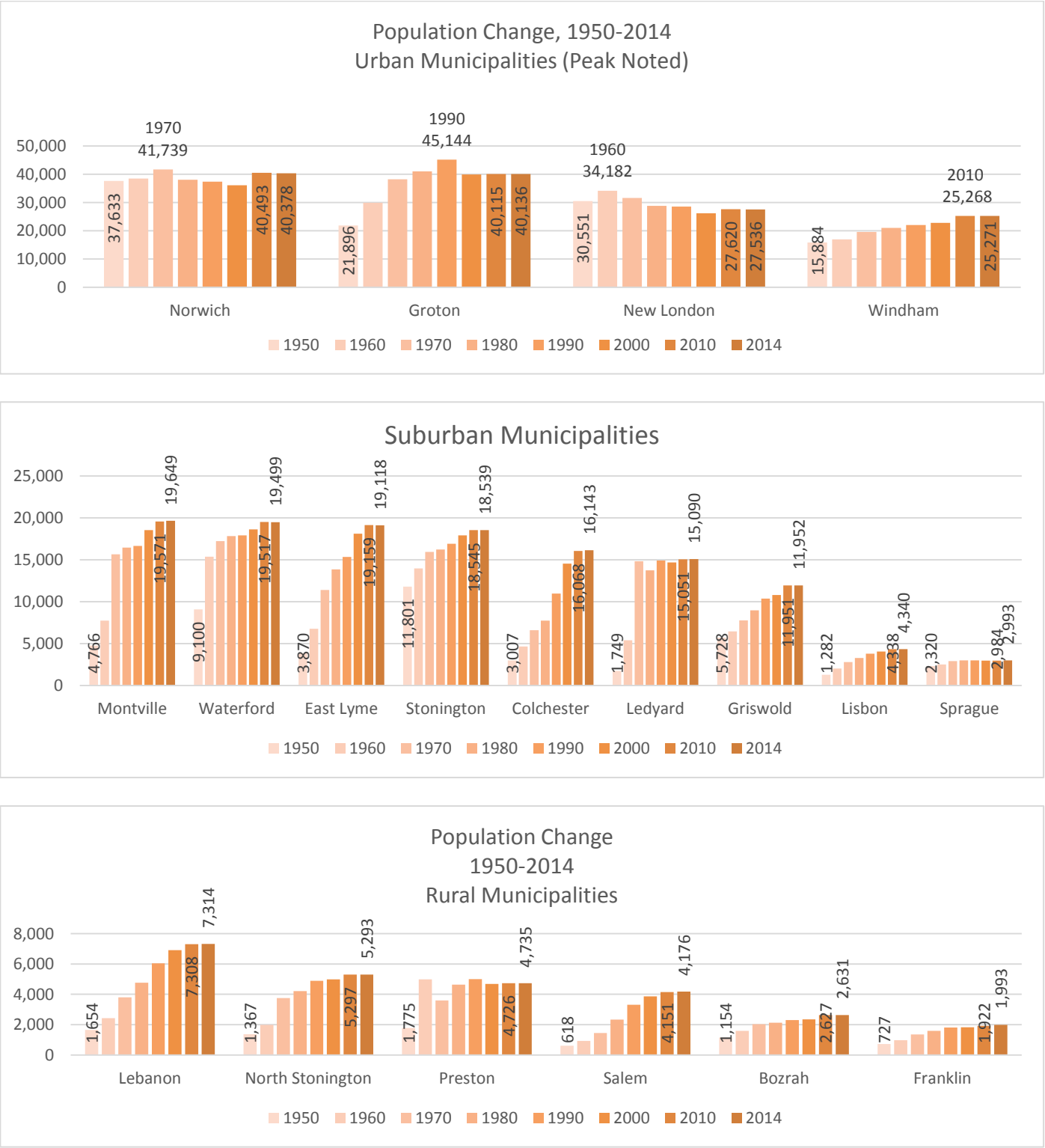


Figure 7. Municipal Population, 1950-2014.
Source: U.S. Decennial Census and 2014 5-Year Estimate.

Existing Land Use

Just under half (42%) of the region's land is considered undeveloped, with the remaining land split into developed (37%) and open space and agricultural use (20%) (Figure 8). Tribal land makes up the remaining 1%. Developed land is comprised of residential uses (23%), commercial uses (7%, here including industrial and institutional uses within a general commercial category), and an additional 7% of land allocated to transportation- and utility-related purposes. Information about land use by individual property parcel was gathered by SCCOG staff from 2015-2016 with the assistance of local planners. This information reports actual current use of a property, and not potential use assigned by local zoning.

Because of evolving technologies that improve the accuracy of land use data, as well as the 2014 changes to SCCOG's member municipalities, it is problematic to directly compare current data with land use data gathered in previous years. In 2011, 40% of the SCCOG region's land was reported as undeveloped, and 22% was agricultural land or open space. Developed land totaled 35% of the region's land area at that time.

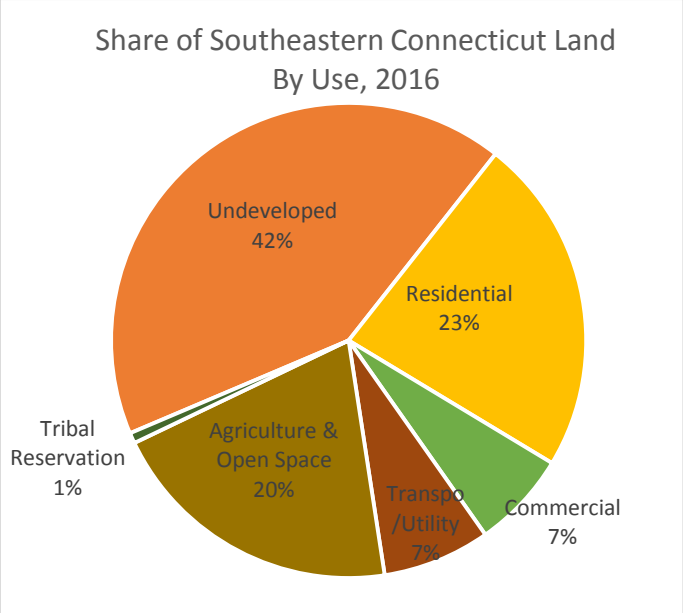


Figure 8. Share of Land by Use, 2016.
Source: SCCOG Land Use Data.

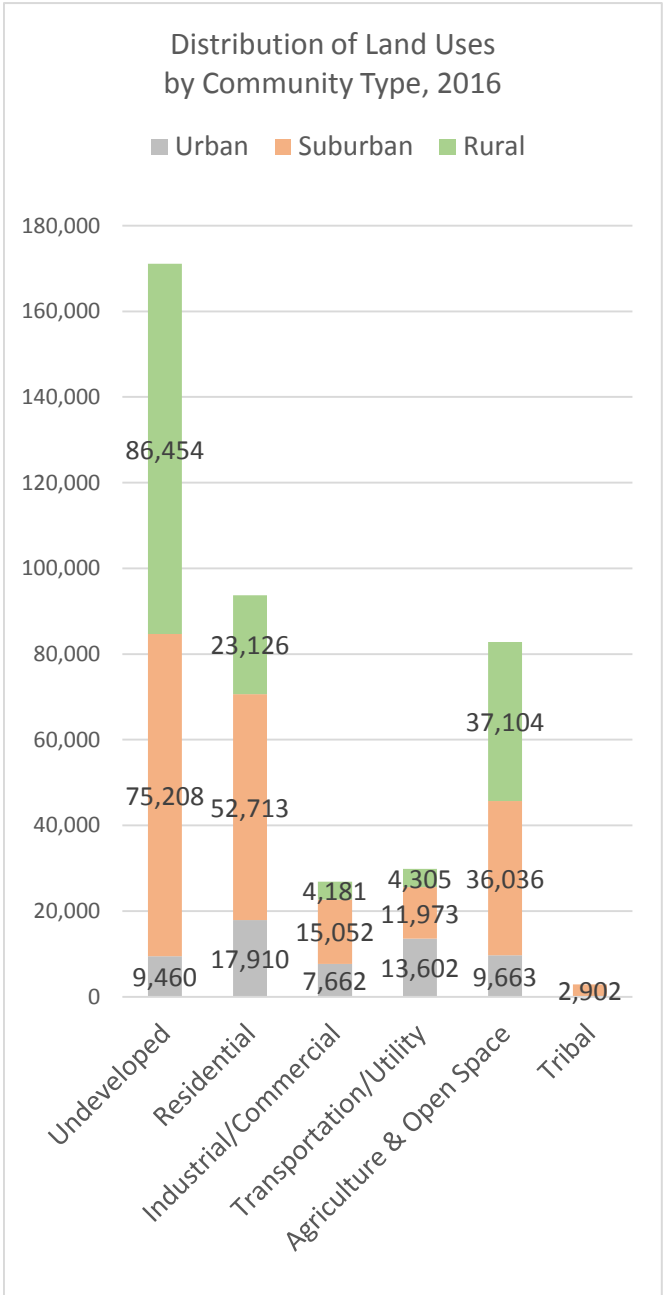


Figure 9. Distribution of Land Uses by Community Type, 2016.
Source: SCCOG Land Use Data.

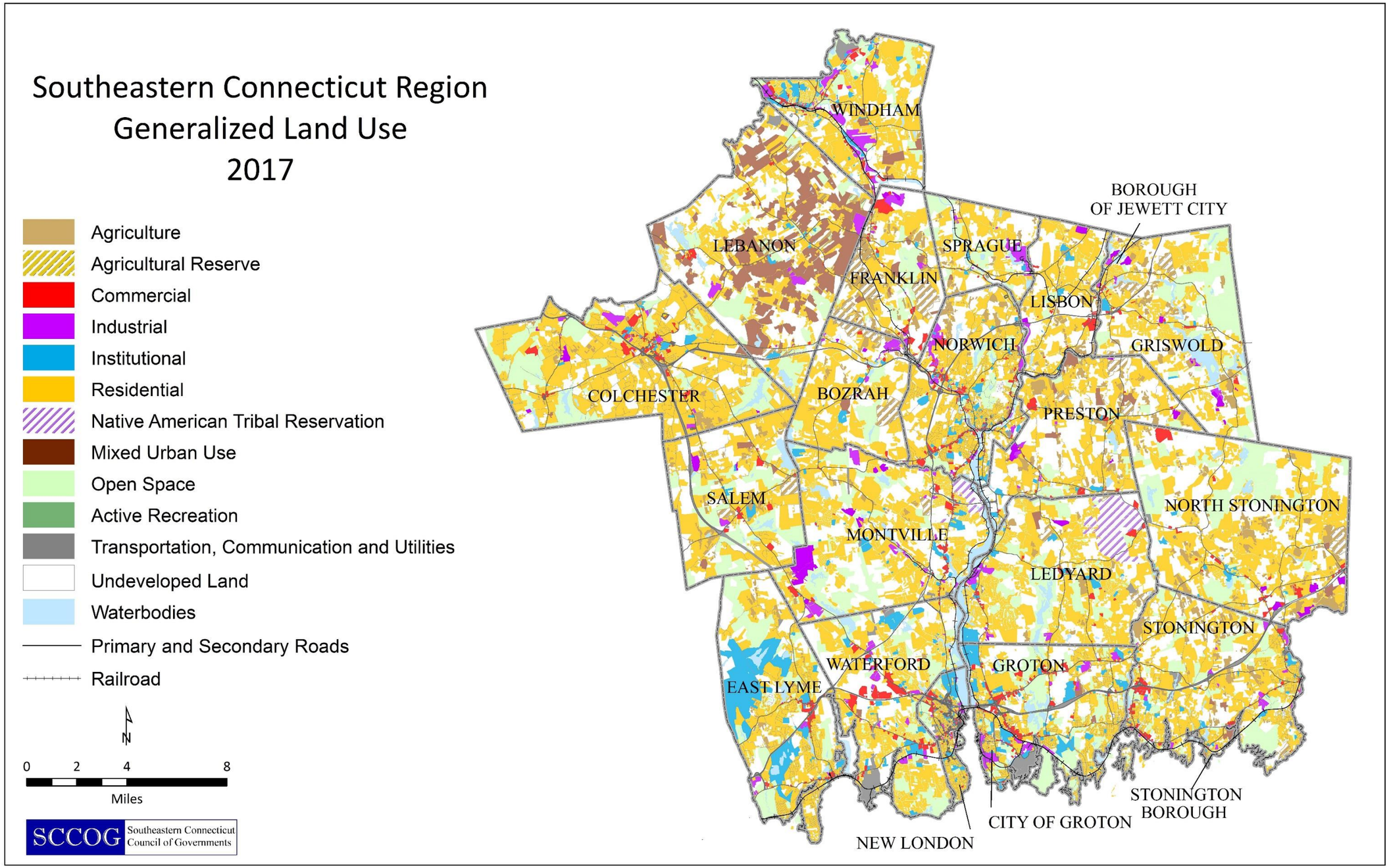


Figure 10. Existing Land Use in Southeastern Connecticut, 2016.
Source: Municipal Land Use Data.

Residential

The majority of land currently used for residential purposes is low-density, defined as less than one housing unit per acre (Figure 11). Medium and higher-density residential includes housing with densities higher than one unit per acre, and is found in urban centers, suburban and rural village centers, and in isolated pockets elsewhere in the region. Only in the region's four urban communities does the amount of higher-density residential land exceed low-density residential land. The amount of land used for residential purposes in the region is more than three times larger than the combined amount used for commercial, industrial, or institutional uses, and nearly equal to all other uses of land not classified as undeveloped.

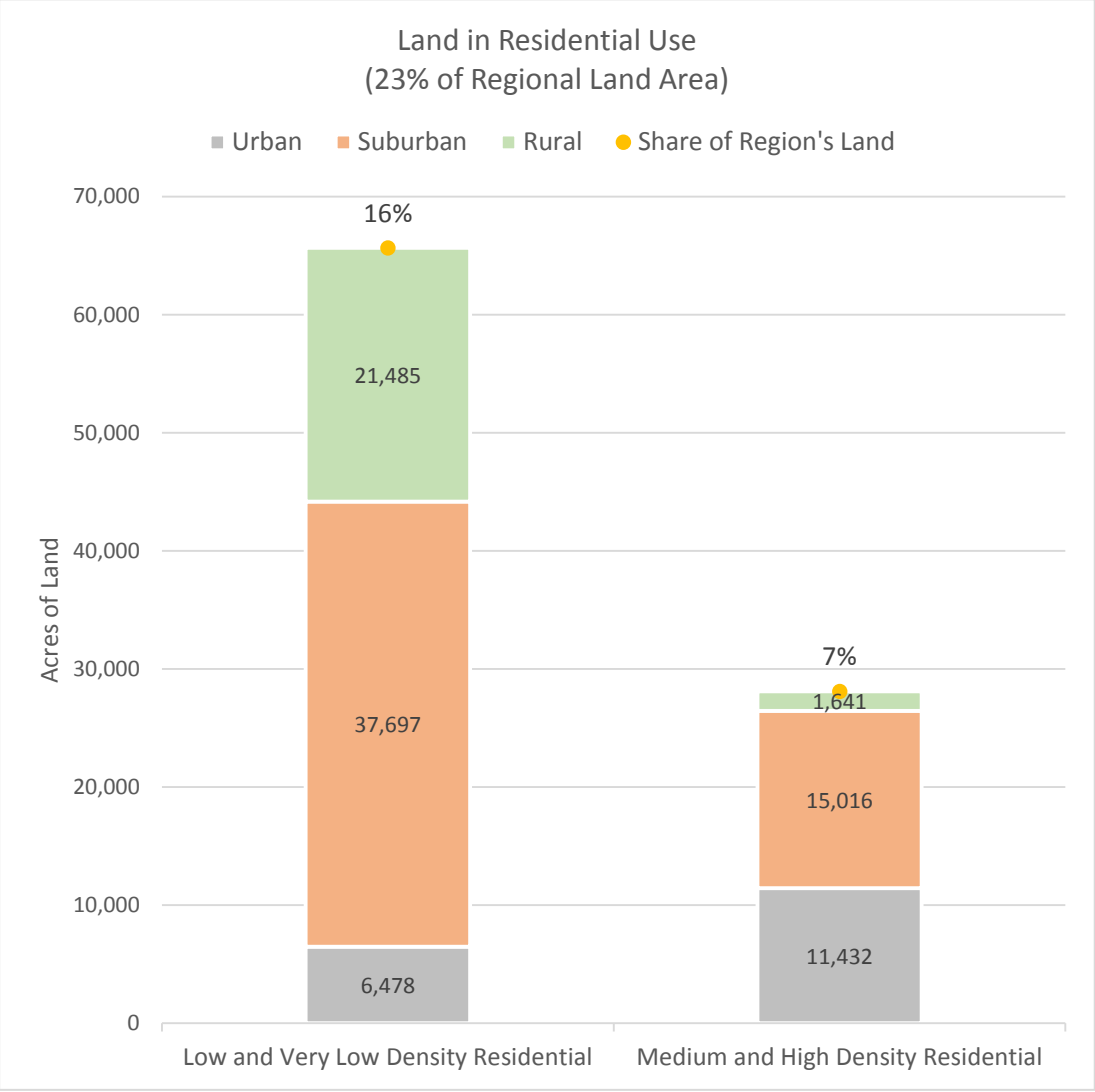


Figure 11. Land in Residential Use.
Source: Municipal Land Use Data.

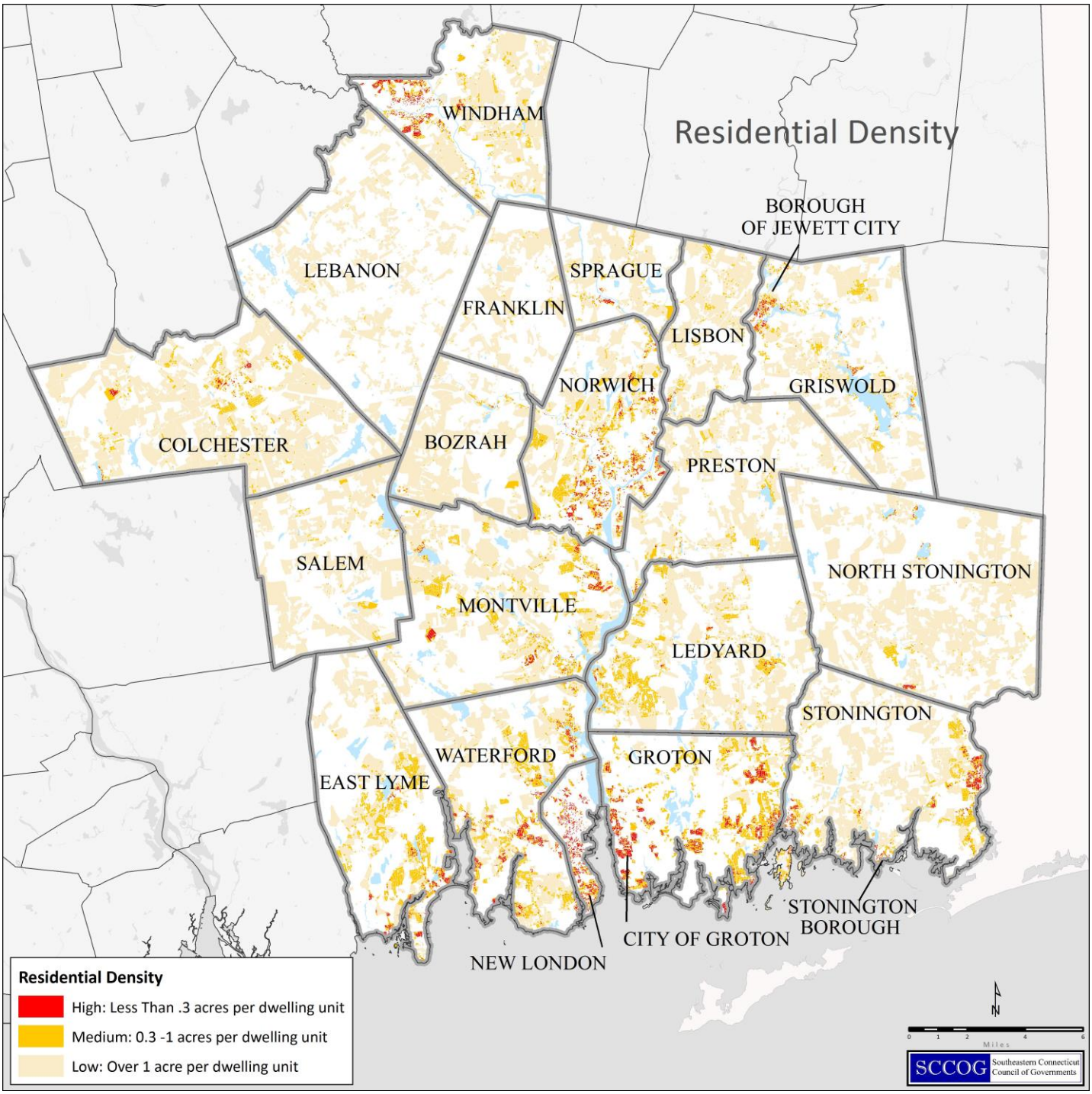


Figure 12. Residential Densities in Southeastern Connecticut.
Source: Municipal Land Use Data.

Commercial

Commercial land uses in southeastern Connecticut include retail, wholesale, and services activities as well as business and professional offices. Despite the importance of this activity, only 7% of the region's land is used for commercial, industrial, or institutional purposes. The majority of commercial land is in suburban towns (56%), with 28% in urban areas and 16% in the region's rural towns.

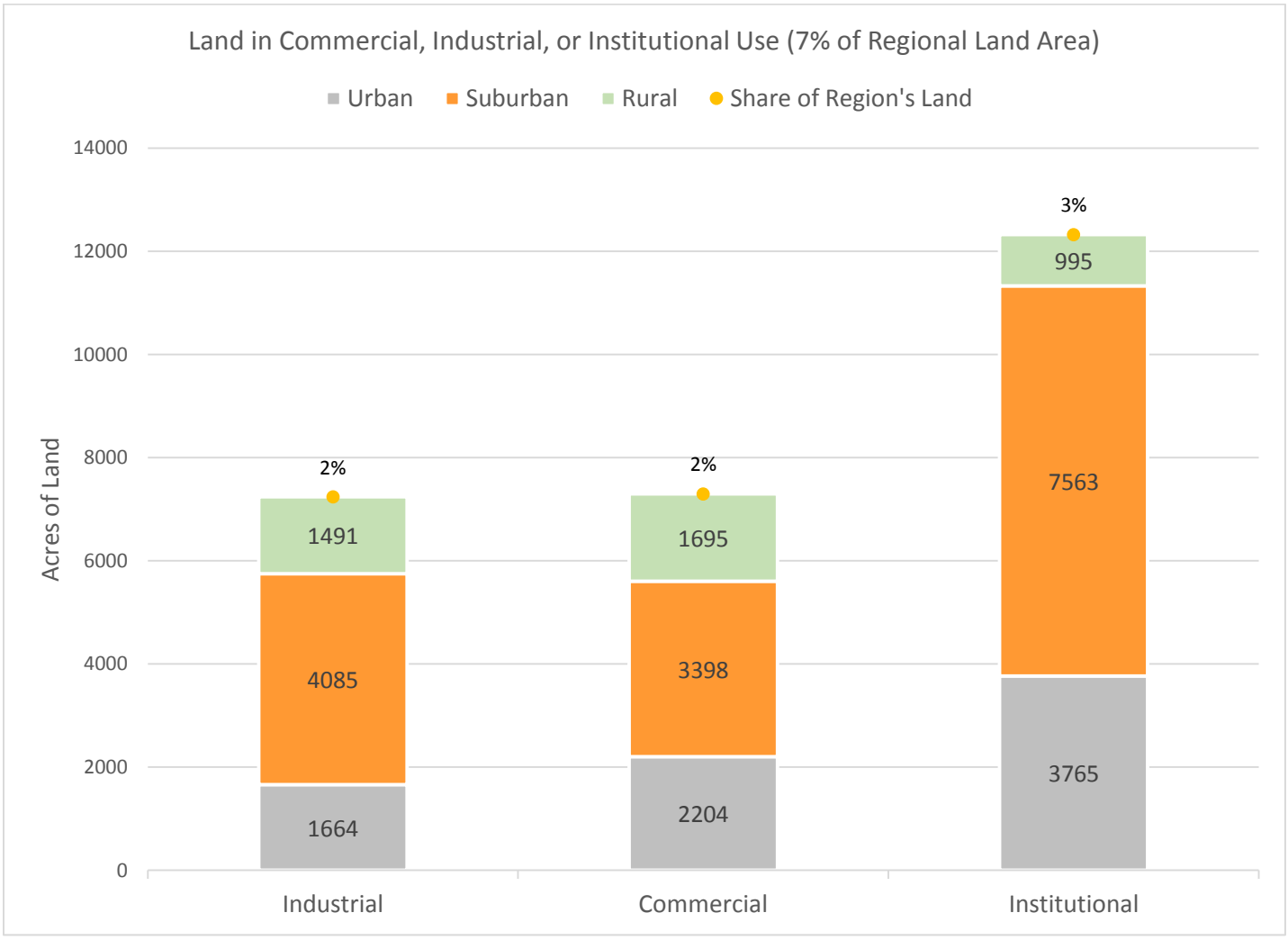


Figure 13. Land in Commercial, Industrial, Institution, or Mixed Urban Use.
Source: Municipal Land Use Data.

Land Devoted to Infrastructure

An often-overlooked category of land is that which is dedicated to accommodating necessary infrastructure: state and local roadways, utility lines and facilities, water treatment plants, and the like. As much land in the region is committed to infrastructure as is used for commercial, 7% of the region's total.

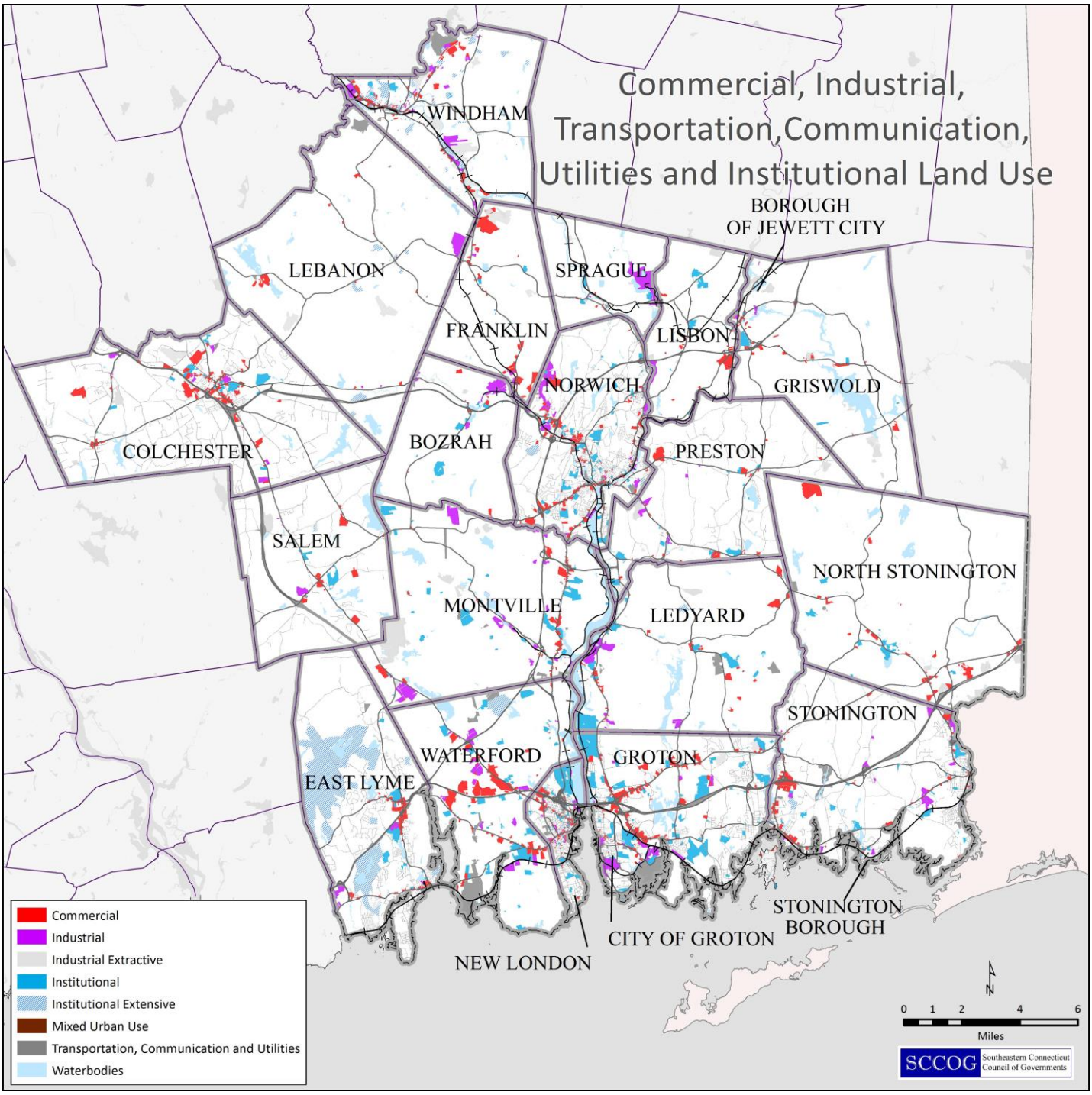


Figure 14. Commercial, Industrial and Institutional Land Uses in Southeastern Connecticut.
Source: Municipal Land Use Data.

Agriculture & Open Space

Parks, cemeteries, and land in agricultural use make up 20% of the region's land area. Reliable and complete data is not currently available region-wide to identify how much of this land is restricted from future development to an alternate use, but at least 3% of agricultural land is known to be preserved under the Connecticut Department of Agriculture's Farmland Preservation Program.

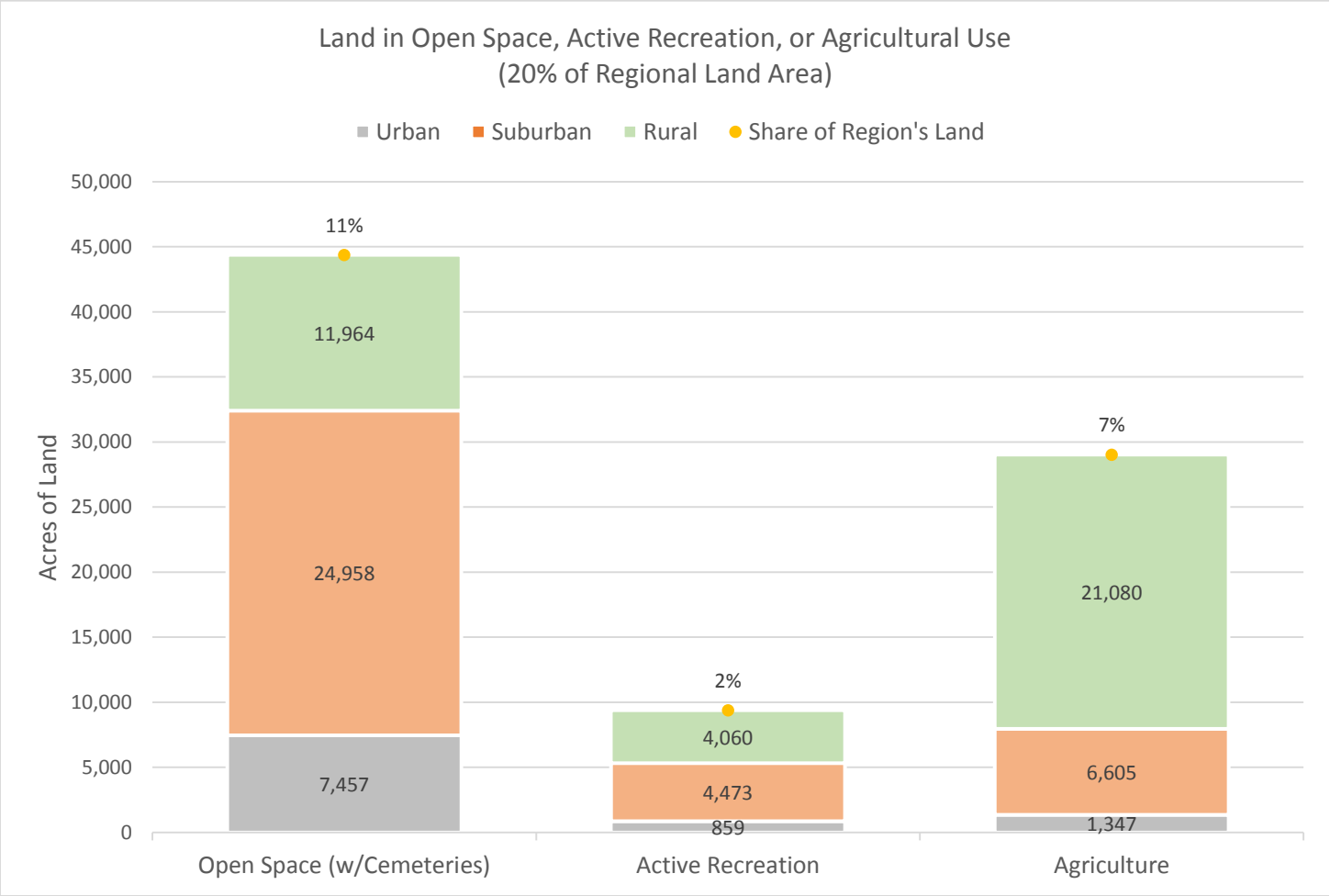


Figure 15. Agricultural Land and Open Space by Community Type.
Source: Municipal Land Use Data

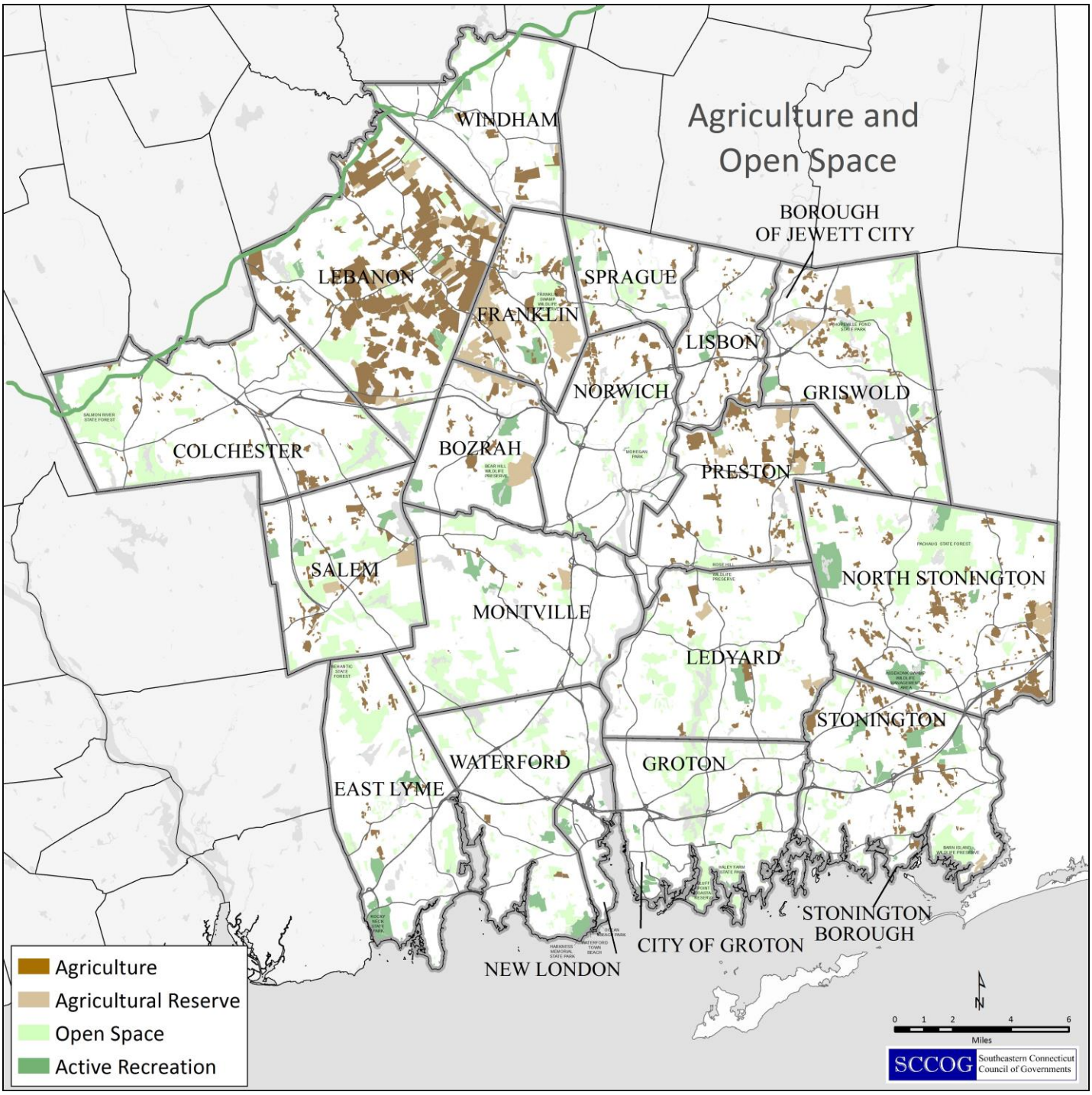


Figure 16. Land Being Used for Agricultural or Recreational Purposes or Preserved as Open Space.
Source: Municipal Land Use Data.

Undeveloped Land

Undeveloped land is land reported as vacant and, for very-low density residential uses, surplus residential land that exceeds a five-acre-per-lot threshold. 42% of the region's land is categorized as undeveloped, while another 7% is currently in agricultural use. A large amount of undeveloped land is located in both suburban and rural communities. Over half (56%) of the land in the region's rural communities is classified as undeveloped, while 39% of suburban land is considered undeveloped. Undeveloped land makes up 16% of urban land.

Land recorded within the undeveloped category may not be capable of supporting intensive uses. The presence of wetlands or lack of public utilities can severely limit the development capacity of a property. Limitations on the development capacity of land across the region are discussed further in the reviews of natural resources and utilities.

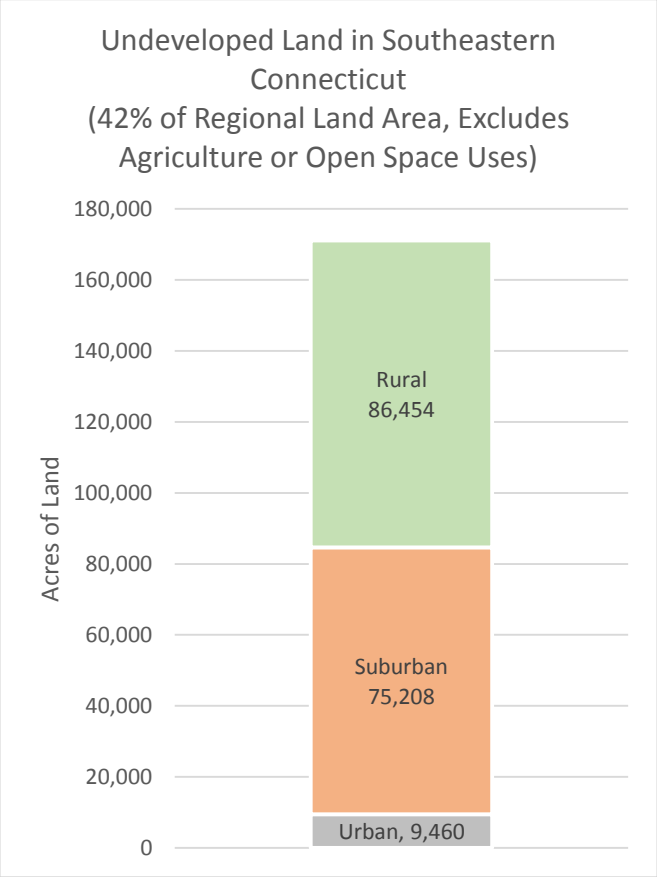


Figure 17. Location of Undeveloped Land.
Source: Municipal Land Use Data.

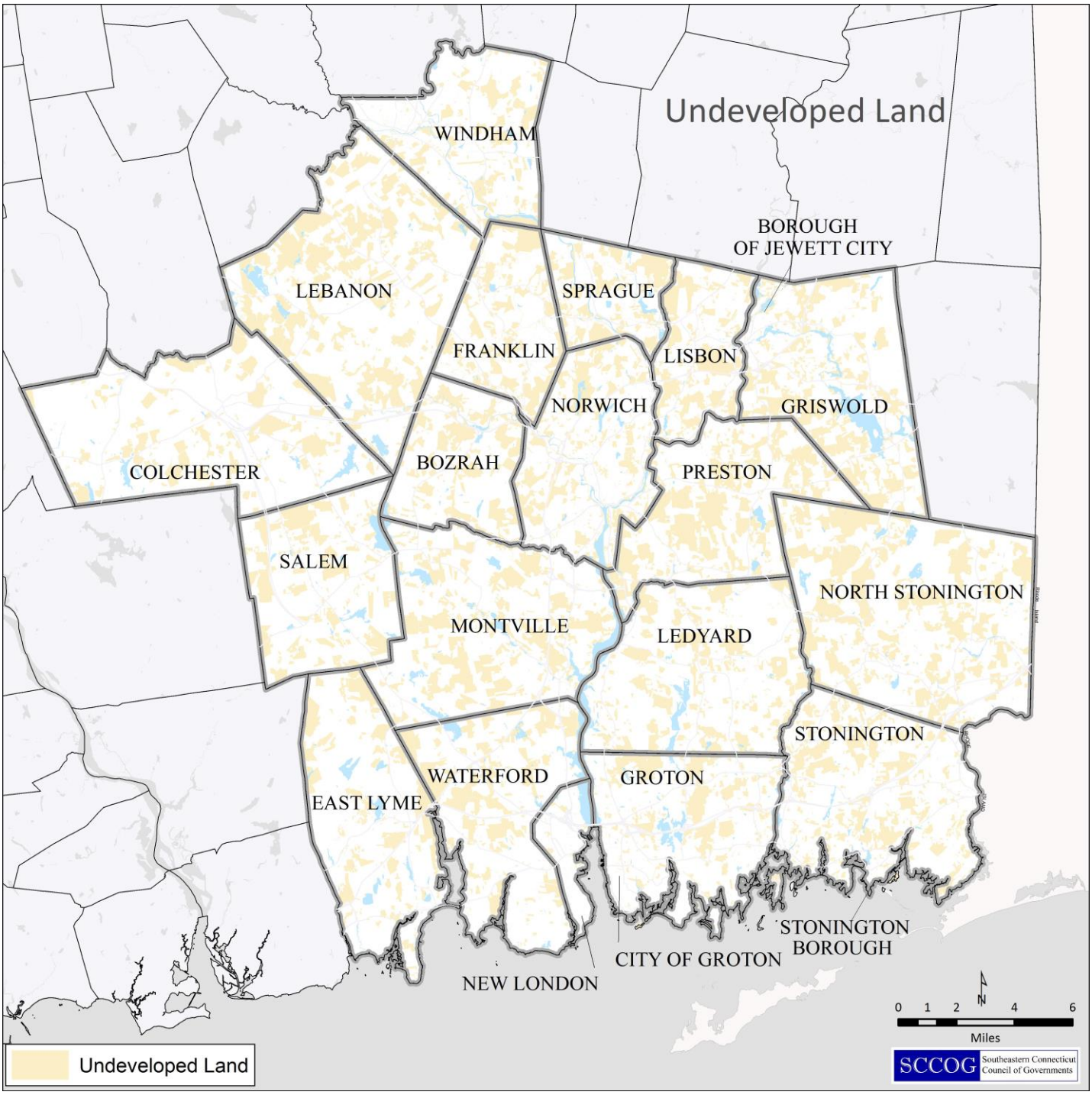


Figure 18. Map of Undeveloped Land.
Source: Municipal Land Use Data. Does not include land reported as used for open space or recreational purposes.

Villages and Urban Downtowns

Neighborhoods of higher-density land uses in the region's suburban and rural towns are vestiges of earlier settlement patterns where shops and housing grew around factories or at important transportation crossroads. Many of the region's rural towns and suburbs have multiple village centers which provide commercial amenities as well as forming an important part of a town's sense of identity.

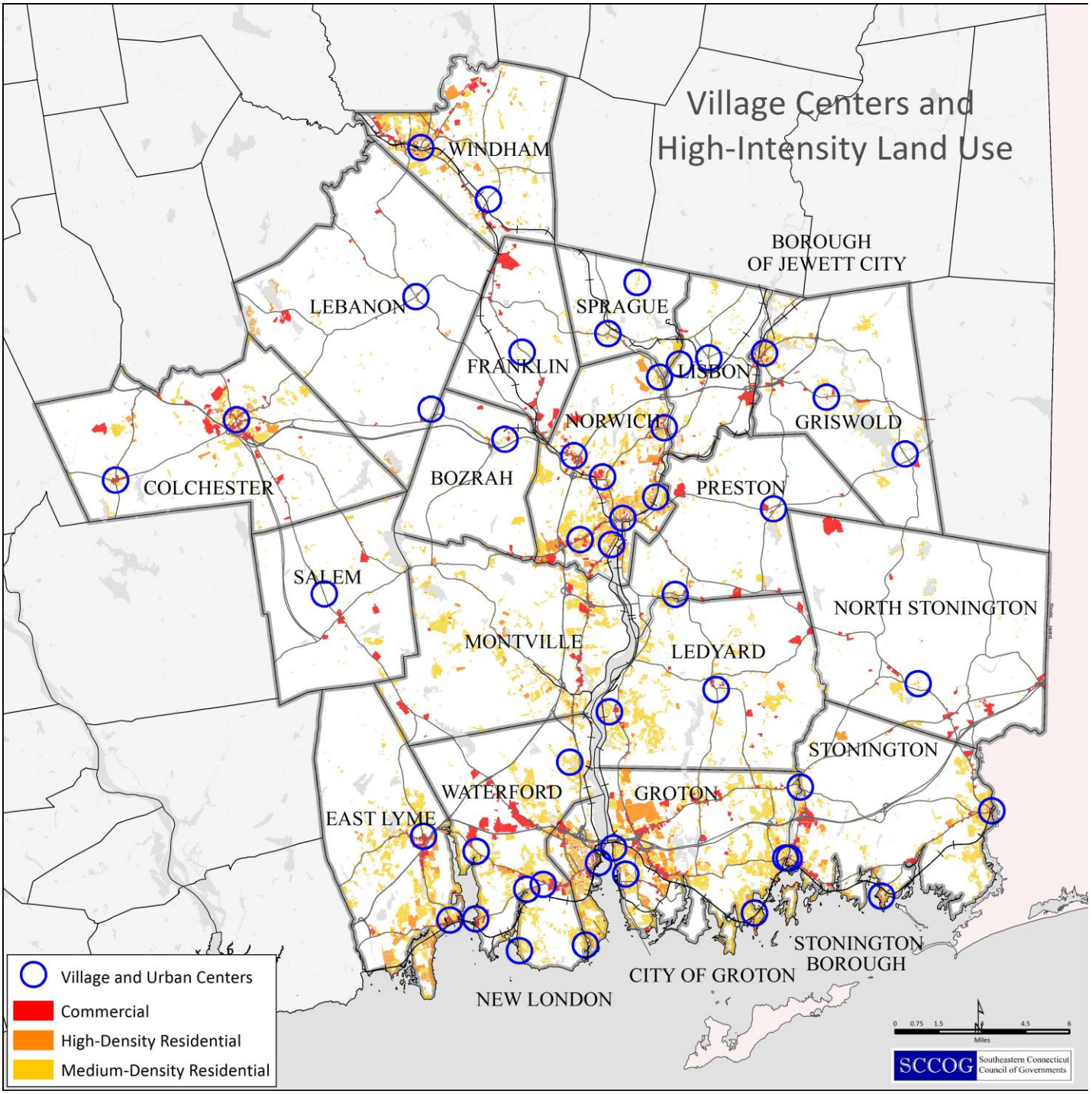


Figure 19. Villages and Downtowns.
Source: Municipal Land Use Data, SCCOG staff.

Trends in Development

Recent patterns of housing construction have generally followed state and national trends, with a jump in construction in the mid-2000s (Figure 20). Higher levels of permitting activity in 2014 suggest that housing construction has begun to rebound post-recession, as has been experienced elsewhere in the state. Southeastern Connecticut has also seen a transition from near-exclusive construction of single-family homes to a greater percentage of multi-family developments.

Information about commercial construction is not yet available within a single data set that would enable tracking of commercial building within the region.

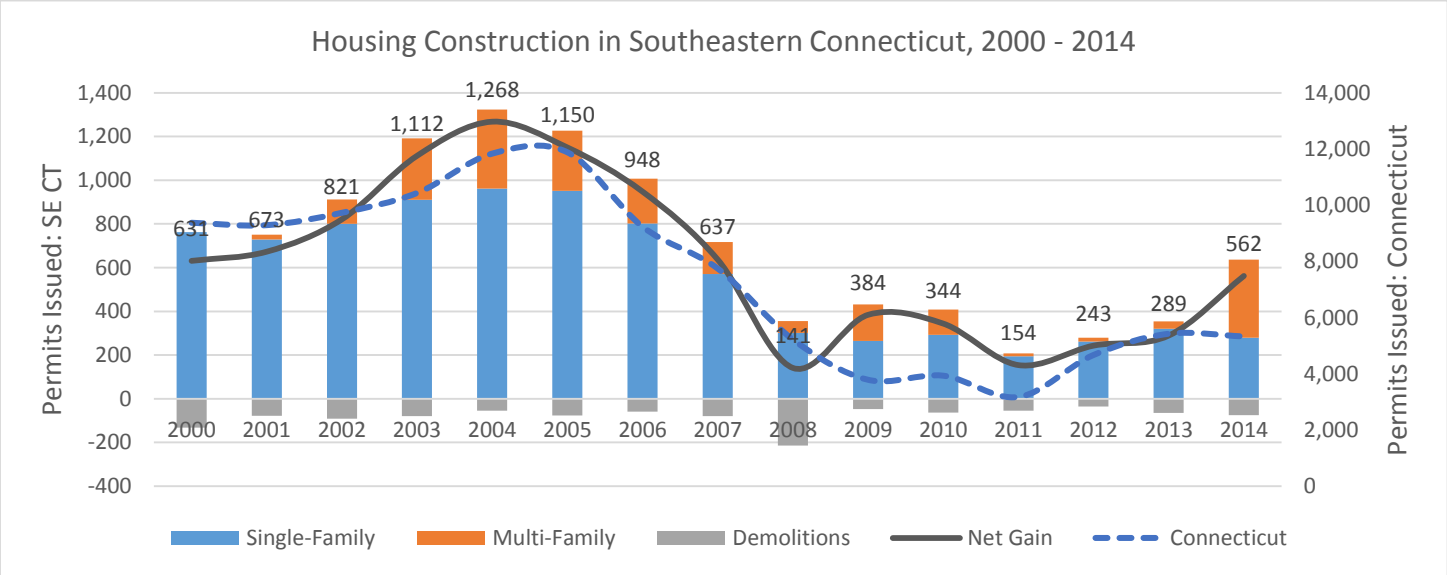


Figure 20. New Home Construction Permits and Demolitions, 2000-2014.
Source: State of Connecticut Department of Economic and Community Development.

The People of Southeastern Connecticut

Age

The age distribution of residents within southeastern Connecticut is generally similar to the rest of Connecticut, but local colleges, military installations, and even prisons increase the number of 20 to 24 year olds in the region relative to the rest of the state. Residents of the region's urban communities are younger than in rural and suburban towns, where the proportion of residents aged 50 and above is far greater (Figure 21). The difference in ages between urban and suburban/rural towns is attributable to the presence of recent immigrants in cities, who are more likely to be young adults, and by baby boomers who moved to suburban and rural communities as young families but are now approaching retirement.

Over the last twenty years, the median age of New London County residents has increased from 32.5 in 1990 to 40.4 in 2010. Senior citizens currently make up between 10% and 20% of residents in each municipality. Towns with more seniors are less likely to have a high share of children, while towns with more children are less likely to have a high share of senior citizens.

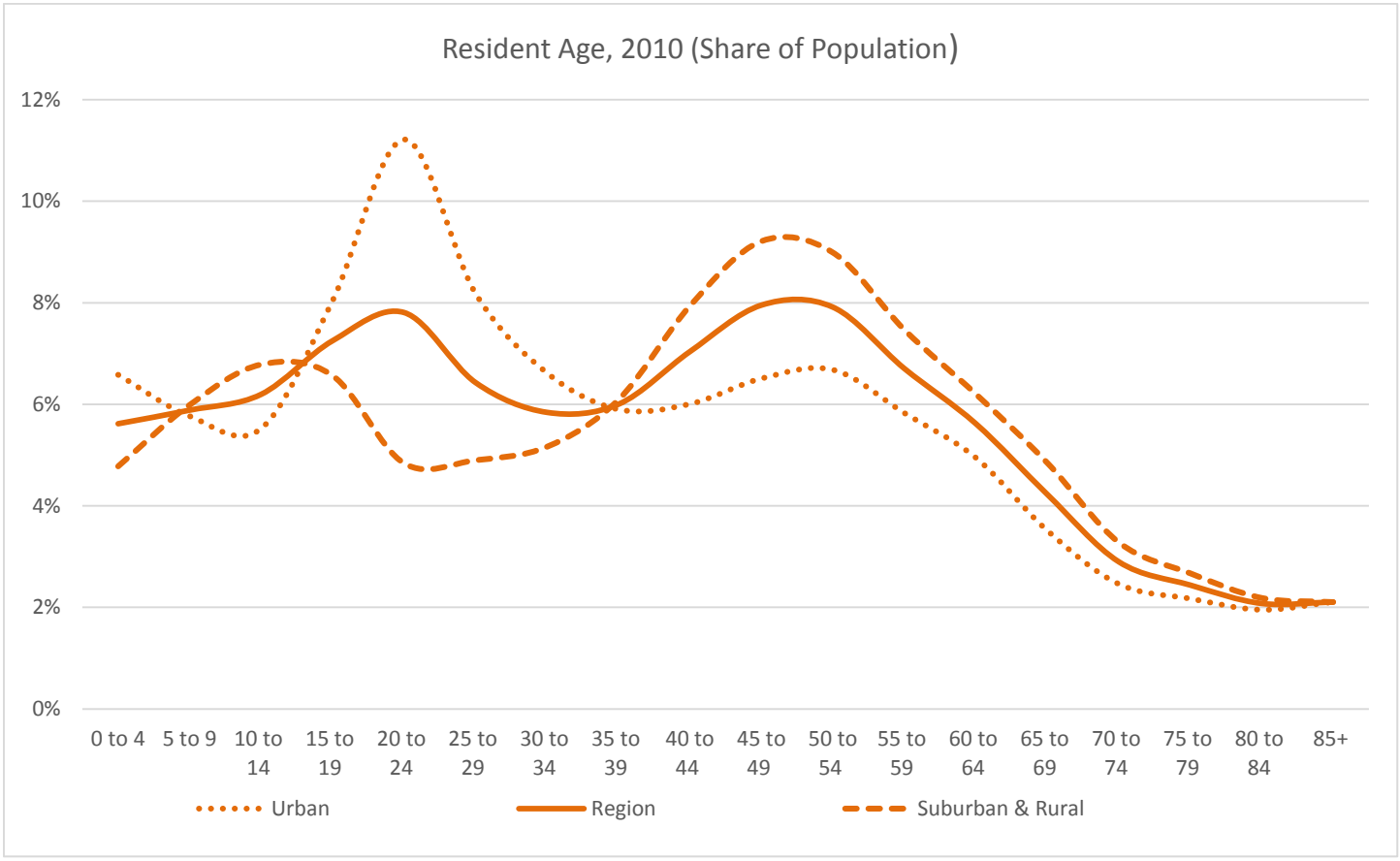


Figure 21. Age of Southeastern Connecticut Residents, by Share of Total Population.
Source: 2010 US Census.

HOUSEHOLD SIZE

Over half of the region's households are small, with only one or two people living in each home. Fewer than 10% of the region's households contain large families of five or more people.

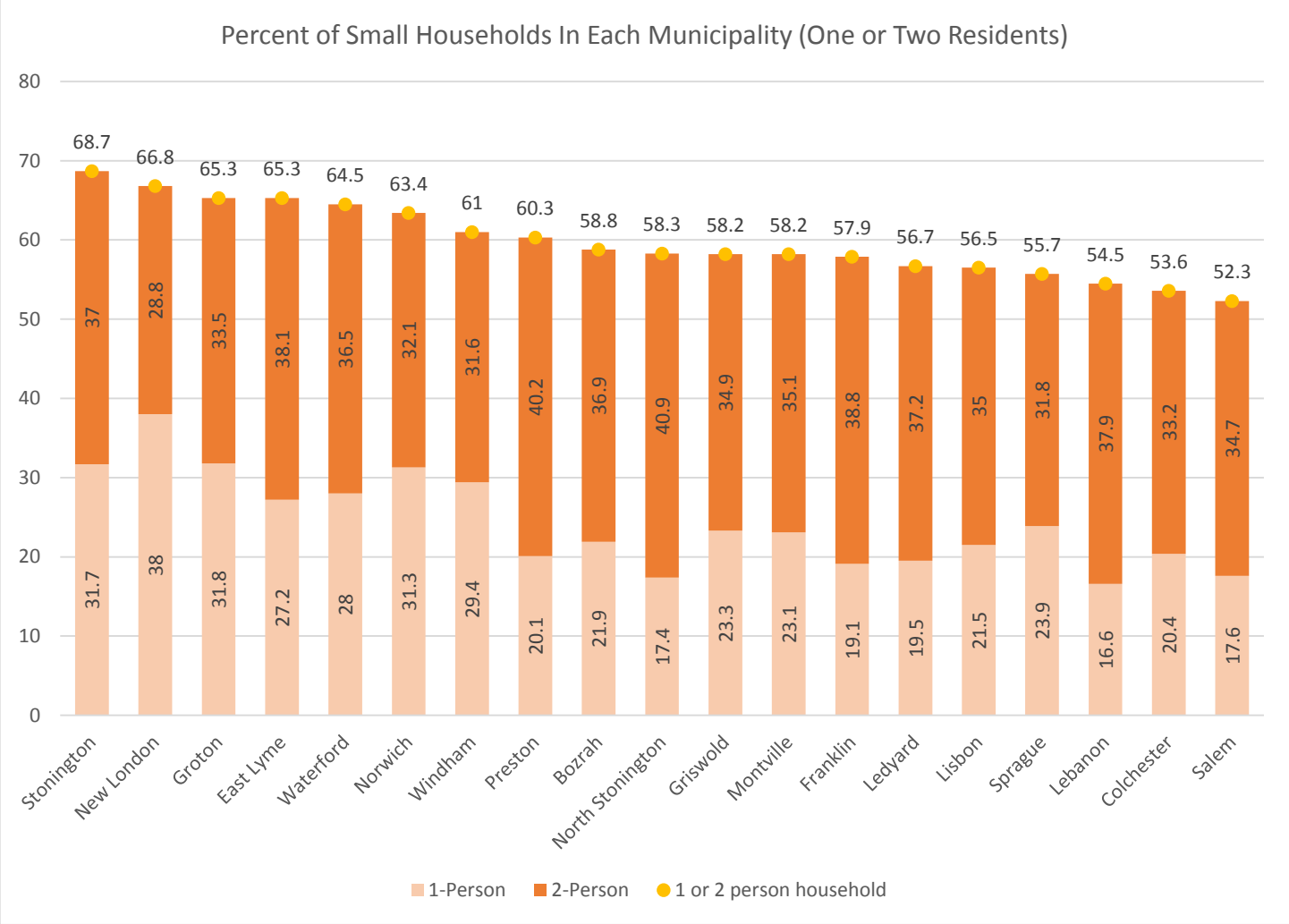


Figure 22. Share of Total Households Consisting of One or Two People.
Source: 2010 U.S. Census.

DIVERSITY

Immigration

Southeastern Connecticut residents include native-born residents as well as immigrants primarily from countries in Asia, Central America, and South America. High numbers of foreign-born residents are increasingly found in the region's cities as well as its suburban and rural towns. In several communities, Asian immigrants now outnumber Latino immigrants from Mexico and Central and South America.

While the region has experienced a trend common to New England in increasing numbers of Latin- American and Asian immigrants, southeastern Connecticut is different in that proportionately more of its immigrant population has come from Asia. Immigration by both groups has been substantially down in the last five years, likely due to poor employment opportunities during the recent recession.

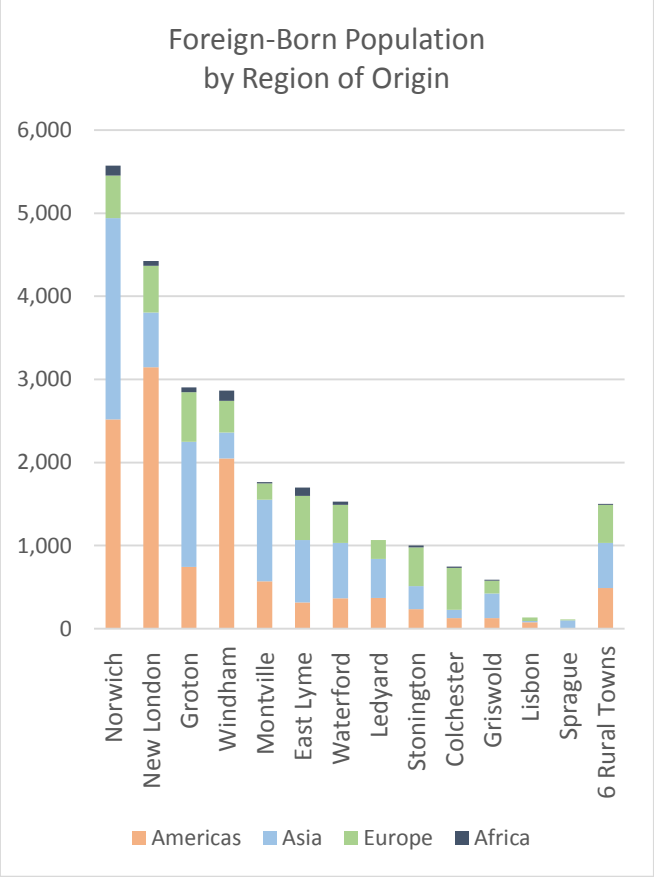


Figure 23. Foreign-Born Resident Population by Region of Origin.
Source: 2010 U.S. Census.

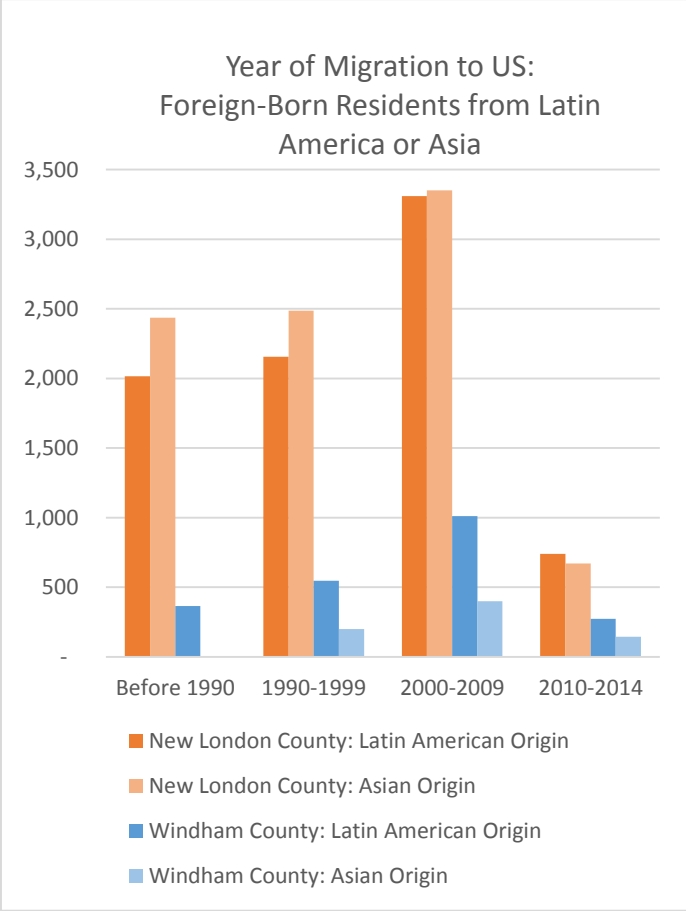


Figure 24. Year of Migration to the United States, Foreign-Born Residents of Latin-American or Asian Origin.
Source: 2010 Census.

Race/Ethnicity

Recent immigrants have further diversified the region's communities. The City of New London is the first "majority-minority" community in southeastern Connecticut, with a population that 49% non-Hispanic white (Figure 25). Hispanic residents comprise around a third of the population in Windham and New London. The share of Asian residents in Norwich and New London is also high, at 10% and 15%, respectively. Figure 26 shows the geographic distribution of non-white residents. Specific areas of East Lyme and Montville have high minority populations due to correctional facilities located within those census block groups.

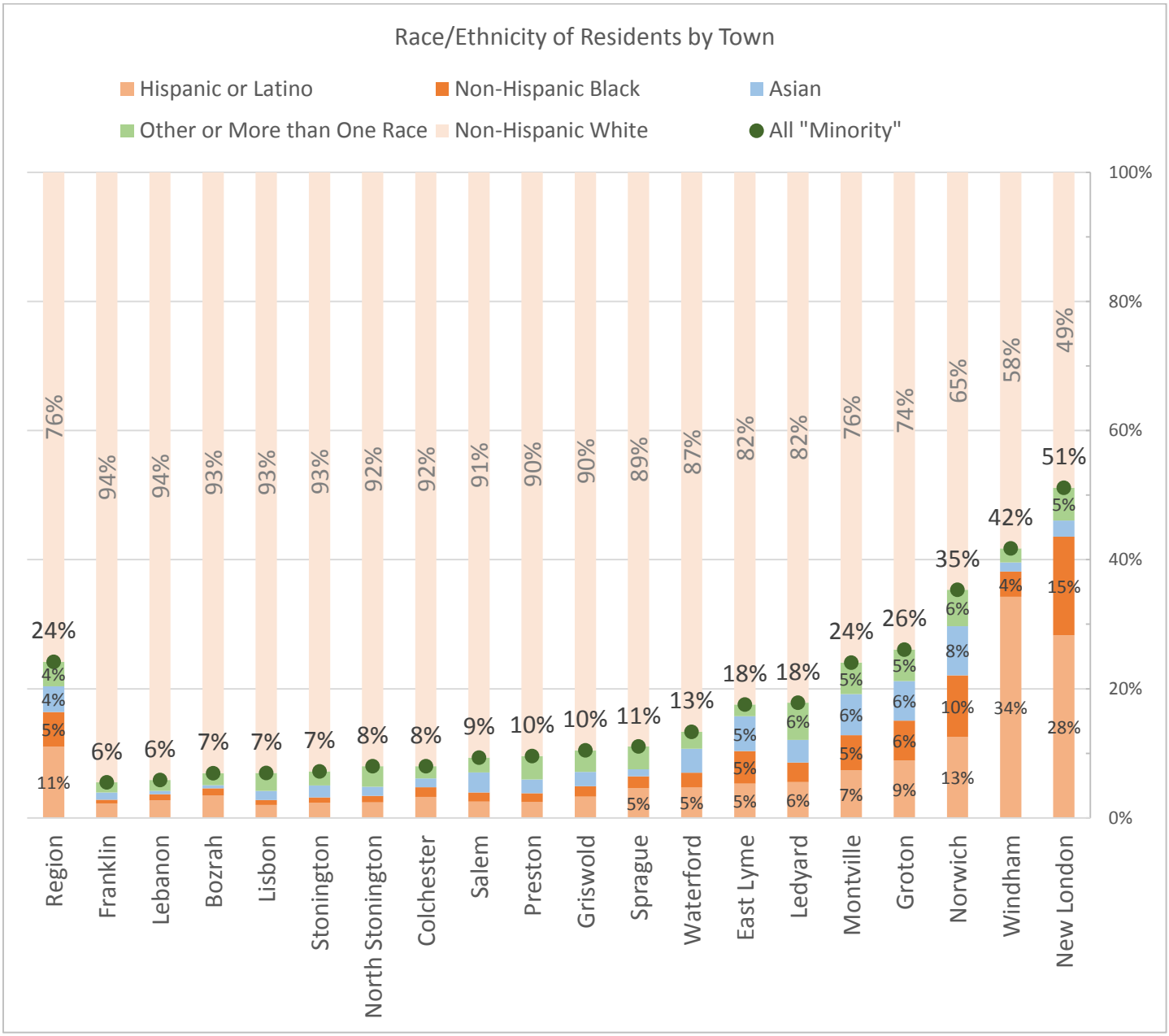


Figure 25. Race/Ethnicity of Southeastern Connecticut Residents.
Source: 2010 U.S. Census.

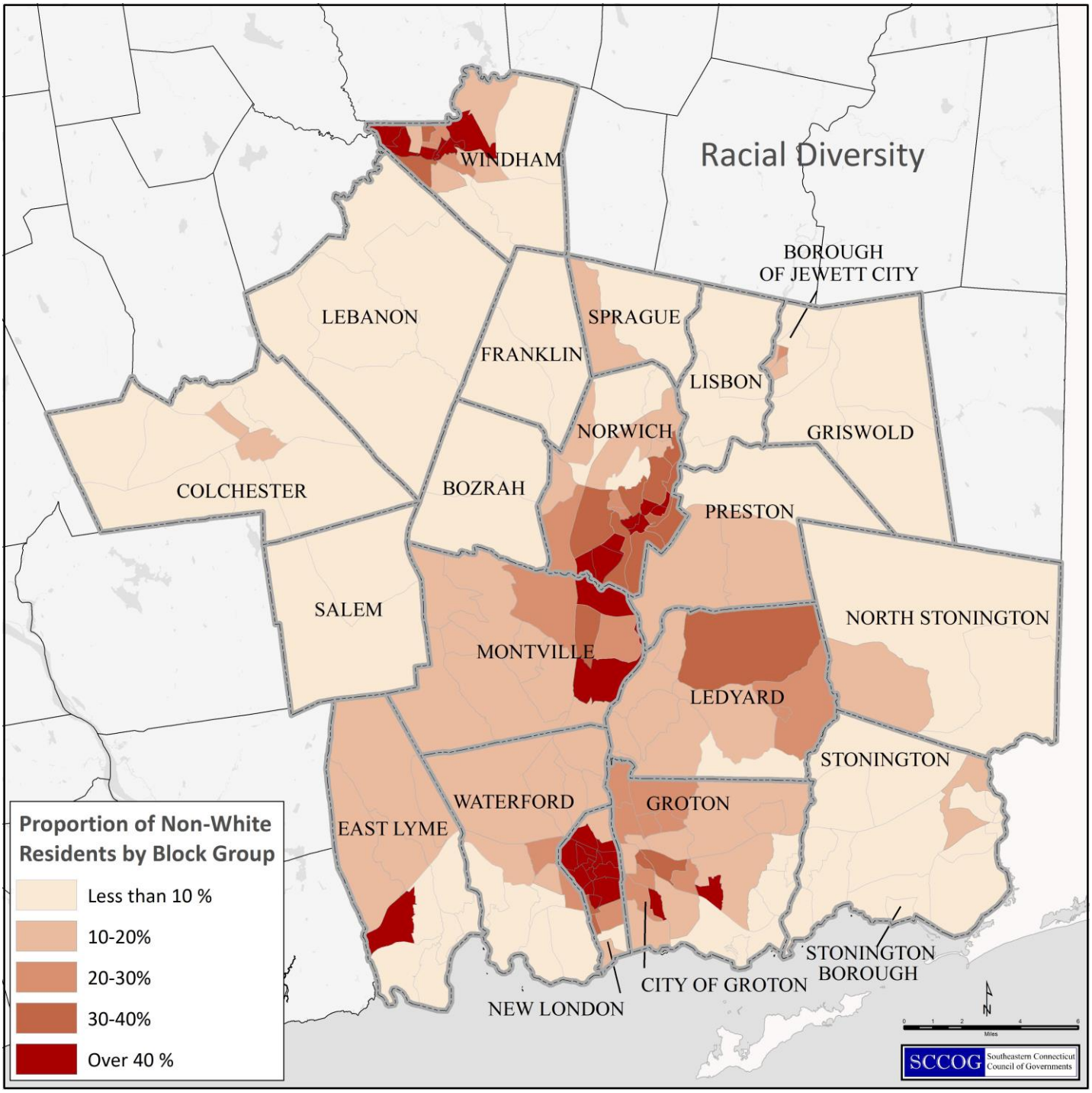


Figure 26. Distribution of Non-White Residents.
Source: 2010 U.S. Census.

Migration Patterns

Migration to/from Southeastern Connecticut

Although Connecticut and the southeastern Connecticut region has experienced several decades of low population growth, the region is still attracting more residents than it is losing. Figure 27 shows net migration rates for different age groups during the period 2000 to 2010. Positive values indicate that more people of a certain age cohort were present in the region in 2010 than would be expected based on their population in 2000 (e.g. migration rates for 35 year olds would be calculated by comparing the number of 35 years olds in 2010 with the number of 25 year olds 10 years previous). A rate of 2 indicates that 102 residents of a certain age were found in 2010 when only 100 would be predicted from natural growth alone. Likewise, if only 95 residents remained, the migration rate would be -5.

New London County experienced positive net migration for all of the examined age groups, with the strongest gains in the young adult (20 to 34) and elderly (75+) categories. Windham County showed much stronger gains in the 35-54 year old population, while losing 20 to 34 year olds. The region differs from the state in that it is much more likely to retain and attract retirees 55 and over.

Breaking down migration rates by race shows considerable differences in migration (Figure 28). The region experienced negative out-migration by white residents in all but the oldest age categories. There were high rates of in-migration by Hispanics and Asians (here represented within Non-Hispanic Other) under age 35 and to a lesser extent among older individuals, while in-migration by black residents ends at age 30.

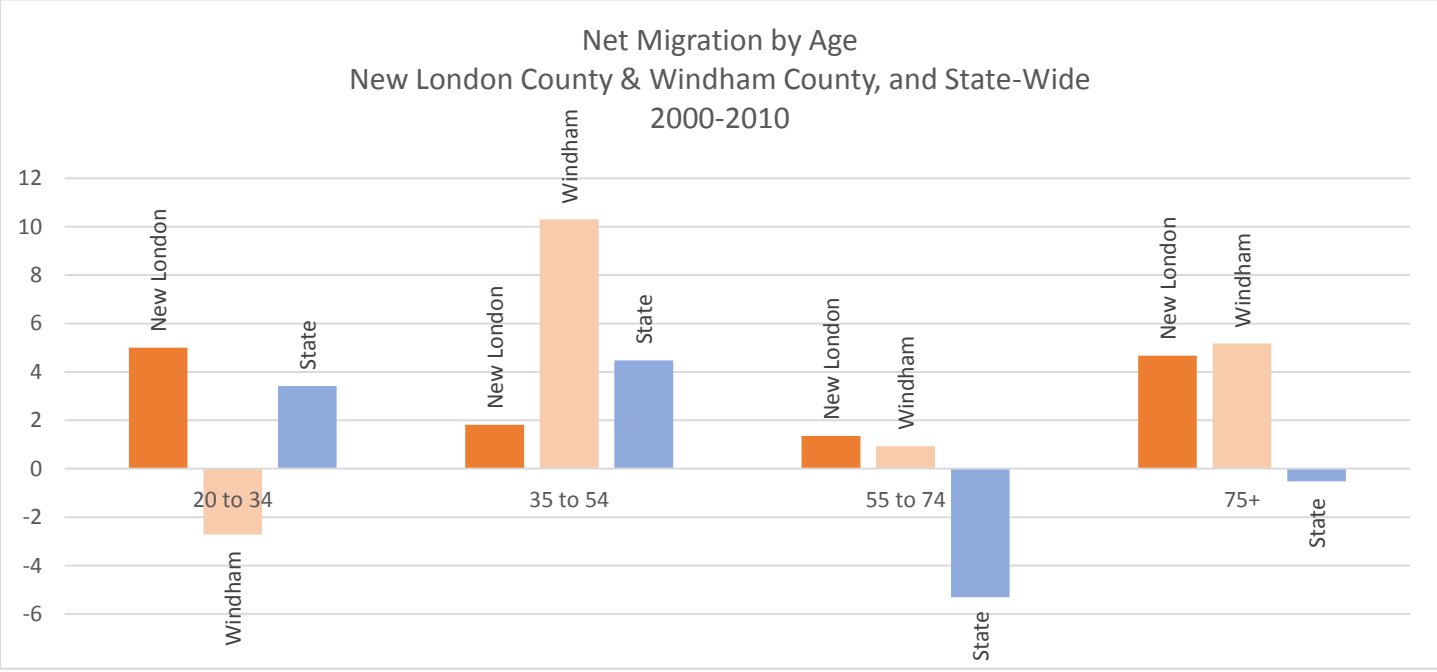


Figure 27. Migration Rates by Age.

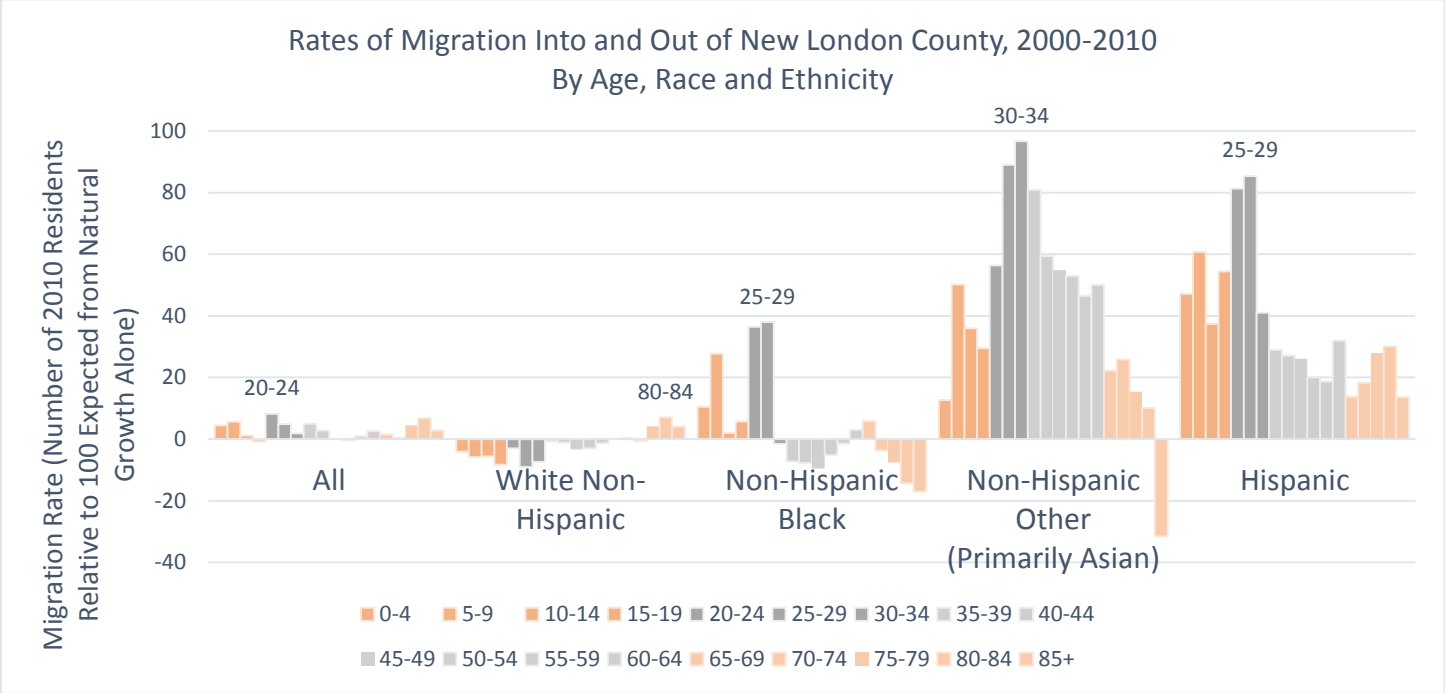


Figure 28. Migration Rates by Age, Race, and Ethnicity, New London County. Positive values indicate in-migration. Age noted for peak in-migration.
Source: U.S. Census Data Analysis by University of Wisconsin Applied Population Laboratory.

Likelihood to Move

The region's older residents are far less likely to have recently moved from one home to another than are younger residents (Figure 29). Younger southeastern Connecticut residents are also more likely to have moved within the past year than residents elsewhere in Connecticut, a characteristic likely linked to the region's high rate of Navy and Coast Guard-related employment. In most Southeastern Connecticut communities, about half of households have changed residences within the past 15 years.

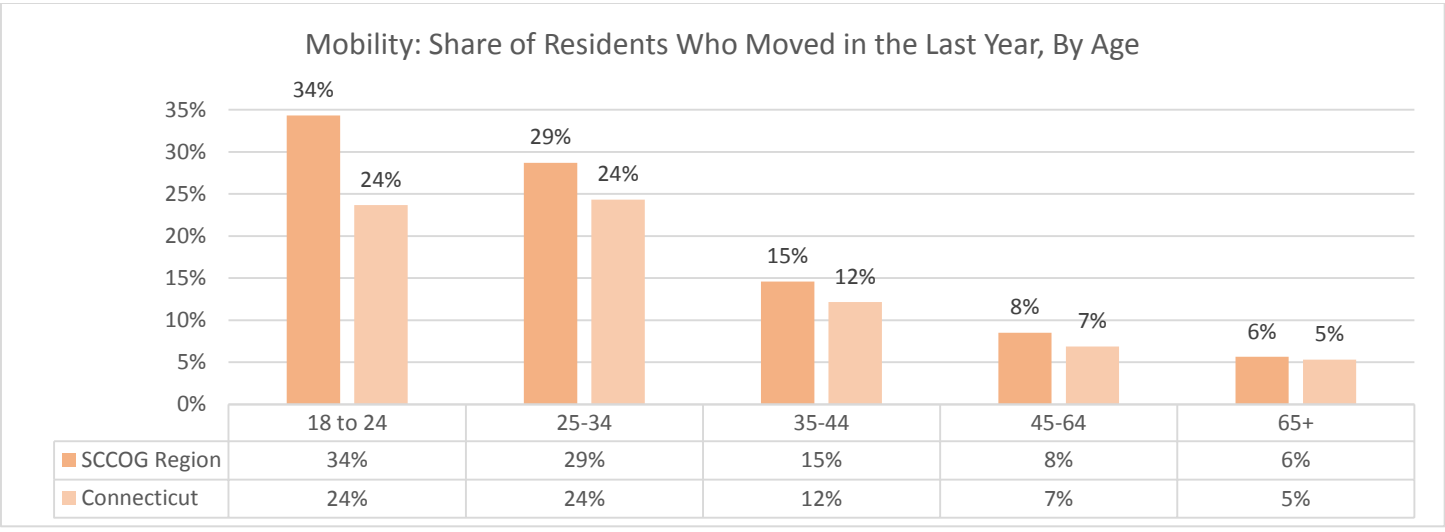


Figure 29. Percentage of Residents Who Moved to a New Residence Within the Past Year.
Source: 2014 Five-Year American Community Survey.

Educational Attainment

Over the last forty years, southeastern Connecticut has seen a continual increase in the education levels of adults, with a third of adults in New London County now possessing a bachelor's degree or higher. New London and Windham County residents are less likely to have received higher education degrees than Connecticut residents on average (Figure 31).

With regard to education levels, the region's ethnic minorities differ from those elsewhere in the state in several ways. Asian residents, many of whom have been drawn to the region for work in the casino industry, are less likely to have obtained higher education than Asians in other parts of the state. Asian residents in New London and Windham Counties are twice as likely to lack high school degrees as they are in the rest of Connecticut, with a large share of female Asians (20%) lacking high school diplomas. At the same time, Asians are more likely than any other racial category (including Whites) to have a bachelor's degree or higher (46%, vs. 35% for whites in New London County). This split of the very well-educated and those that lack education point to a diversity of conditions even within a single ethnic group that has arrived in the region relatively recently.

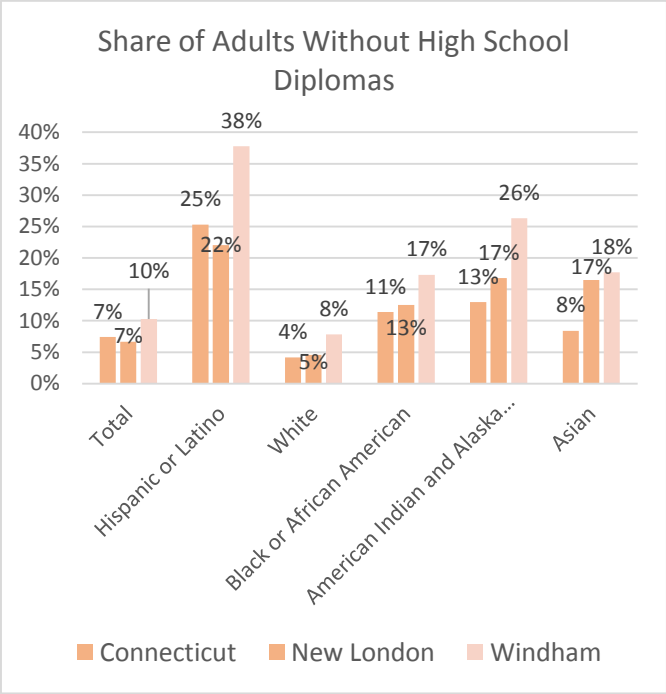


Figure 30. Share of Adults without High School Diplomas. Source: 2006-2010 Five-Year American Community Survey.

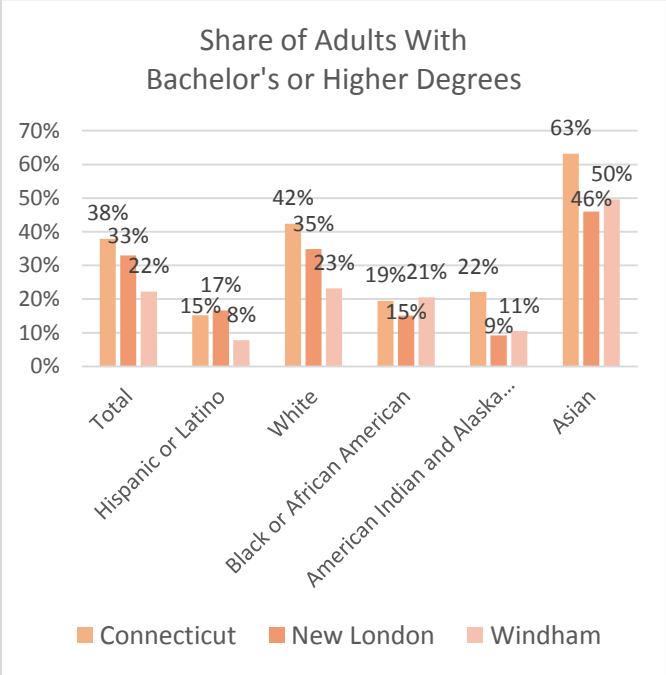


Figure 31. Educational Levels by Share of Adult Population. Source: 2006-2010 Five-Year American Community Survey.

INCOME

Income varies considerably within southeastern Connecticut, with nearly a third of all households earning more than $100,000 per year; a third earning between $50,000 and $100,000; and a third earning less than $50,000 (Figure 32). In the region's four urban communities, lower-income households making less than $50,000 make up 45% of households. While lower-income households are proportionately more likely to live in urban areas, they are represented in all of the region's communities. The community with the lowest share of lower-income households is Ledyard, with 19% of all households earning less than $50,000 (Figure 33). About half of all households in Windham, New London, and Norwich earn less than $50,000 per year.

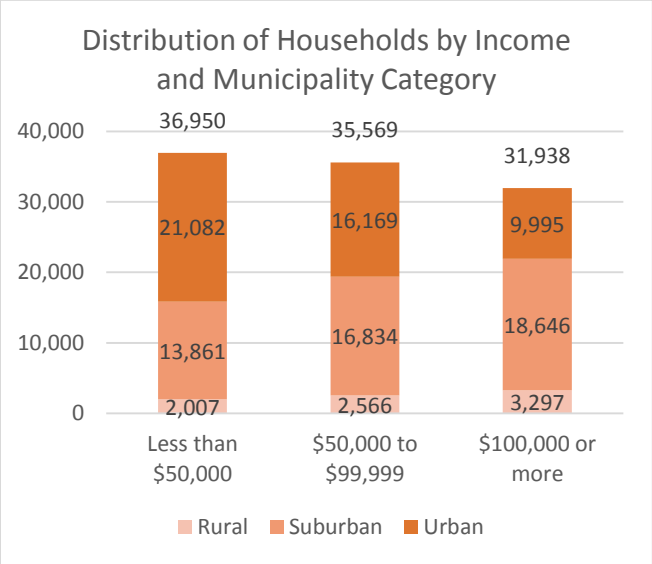


Figure 32. Household Income.
Source: 2009-2014 Five-Year American Community Survey.

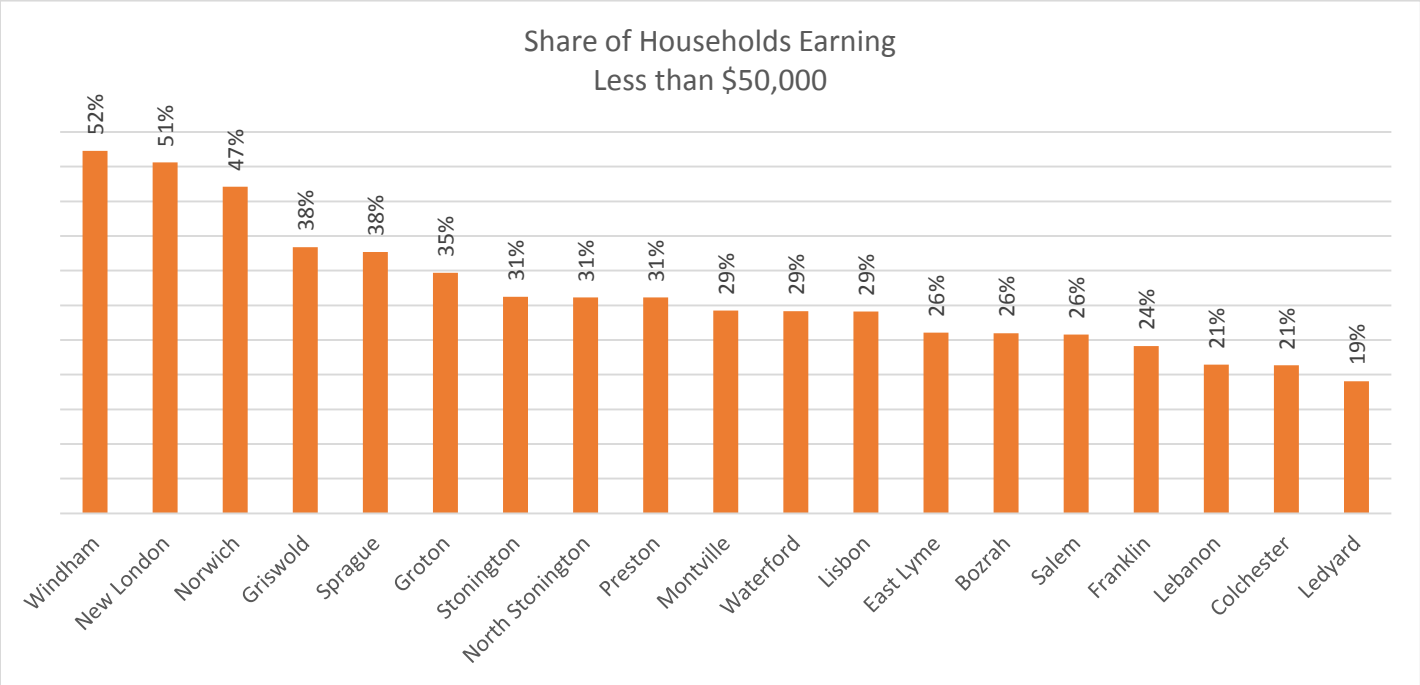


Figure 33. Share of Households Earning Less than $50,000 per Year in Each SCCOG Municipality.
Source: 2009-2014 Five-Year American Community Survey.

EMPLOYMENT STATUS

Data on the employment status of southeastern Connecticut adults indicates that unemployment in the region is slightly higher than Connecticut as a whole, with New London's unemployment rate of 8.3% standing out as particularly high and nearly double that of suburban and rural towns with the lowest rates of unemployment. Unemployment statistics are reported by the U.S. Bureau of Labor Statistics and represent the share of the current labor force who are jobless, looking for jobs, and available for work, and may under-represent potential workers who have dropped out of the labor force unwillingly. The 2015 survey of residents of Greater New London conducted by Data Haven shows dramatic differences in the self-reported unemployment status of residents by race and income, with unemployment rates double and triple that of the regional average for black adults and those in the lowest income bracket (Figure 34).

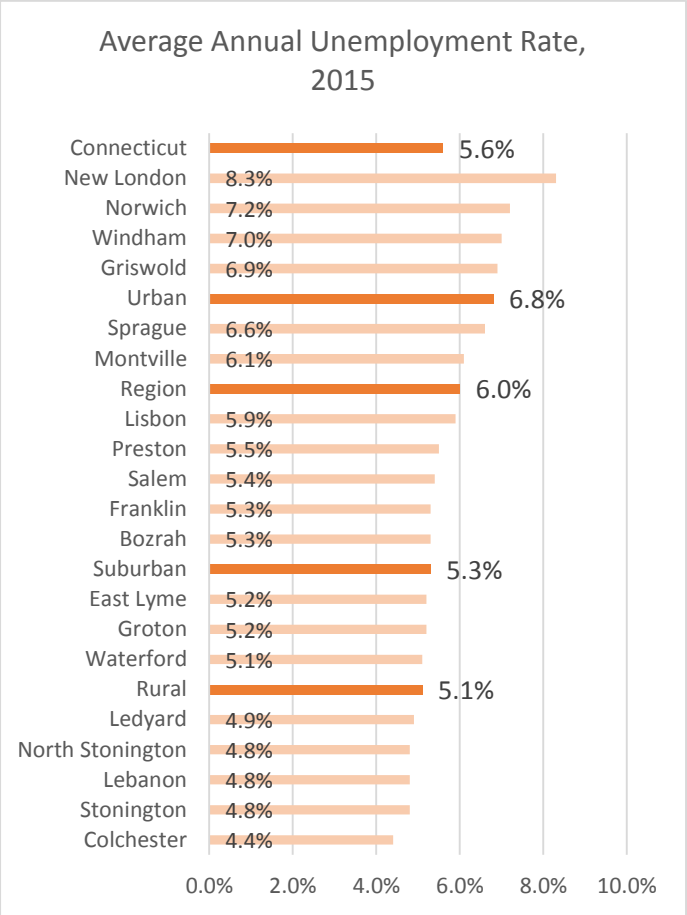


Figure 34. 2015 Average Annual Unemployment Rates.
Source: U.S. Bureau of Labor Statistics.

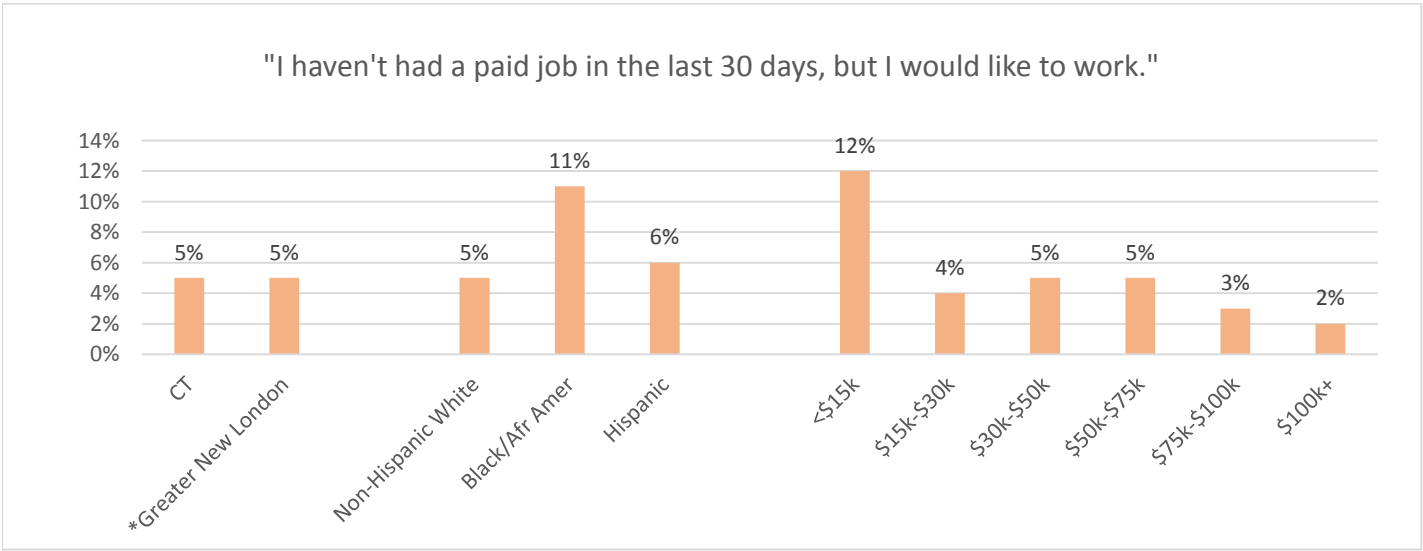


Figure 35. Residents Unemployed and Wishing to Work.
Source: 2015 DataHaven Community Wellbeing Survey.*Greater New London in this data set includes East Lyme, Groton, Ledyard, Lyme, Montville, New London, North Stonington, Old Lyme, Stonington, and Waterford.

Projected Population Growth and Decline

Population growth projections have been developed by the Connecticut State Data Center by considering the natural fertility and mortality of the current population and then adjusting growth by likely in- or out-migration, based on local 10-year histories of migration by age.[1]

The Data Center predicts that the region will continue its slow growth. The region's growth is projected to be slightly slower than Connecticut's as a whole, and considerably slower than what is projected for many of Connecticut's more rural regions.

Only a few towns (Bozrah, Griswold, Montville, and Norwich) are projected to grow more than 10% in population in the next ten years, and two urban towns (Groton, New London) may even shrink due to declining household sizes. Because projection methodologies do not consider the actual amount of land available in each municipality for new housing to accommodate population growth, the actual locations of population increases or declines in the region may vary considerably from what is projected depending on where new housing is built.

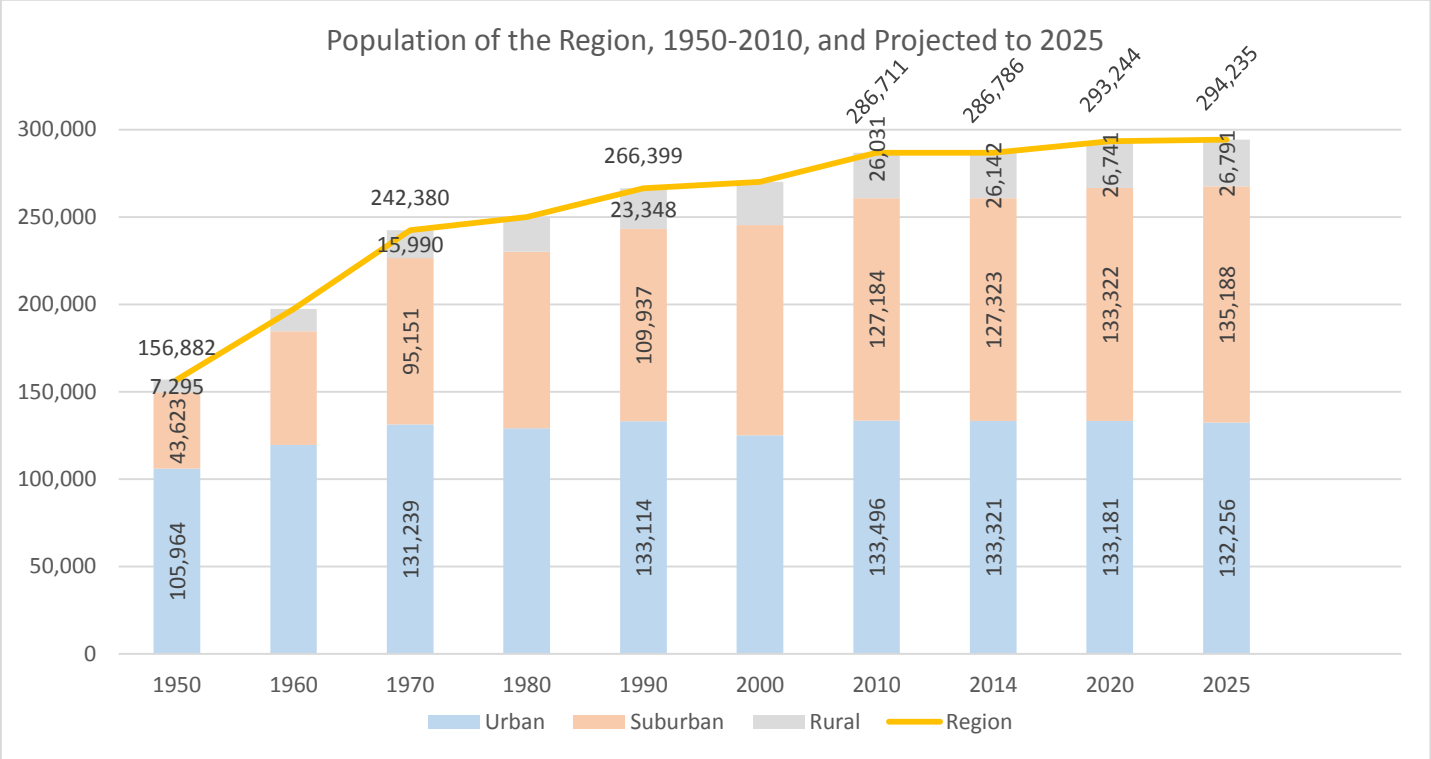


Figure 36. Historic and Projected Growth, SCCOG Region.
Source: Connecticut State Data Center.

[1] Projections are calculated using the following data: 2010 U.S. Census count of population by municipality; mortality and fertility rates for Groton, New London, Norwich, and Windham were derived by averaging actual birth and death data from 2000-2010 from 46 mid-sized Connecticut municipalities; mortality and fertility rates for the remaining towns were similarly derived from 2000-2010 birth and death data from the 115 smaller towns in Connecticut. Migrations are calculated for each 5-yr age and gender-specific cohort by estimating the expected population in 2010, based on the population in 2000 and assuming only natural shifts in population from births and deaths. The difference between the expected 2010 population and actual found 2010 population is a result of migration, and used to calculate a rate of in- or out-migration by 5-year age group and gender that can be applied forward to future years. Large measurable populations in group quarters, such as prisons, were held constant (i.e. not adjusted by fertility, mortality, or migration). In the SCCOG region, the group quarters populations held constant were the following: correctional institutions in East Lyme and Montville, the U.S. Coast Guard Academy in New London, and Naval Submarine Base in Groton.

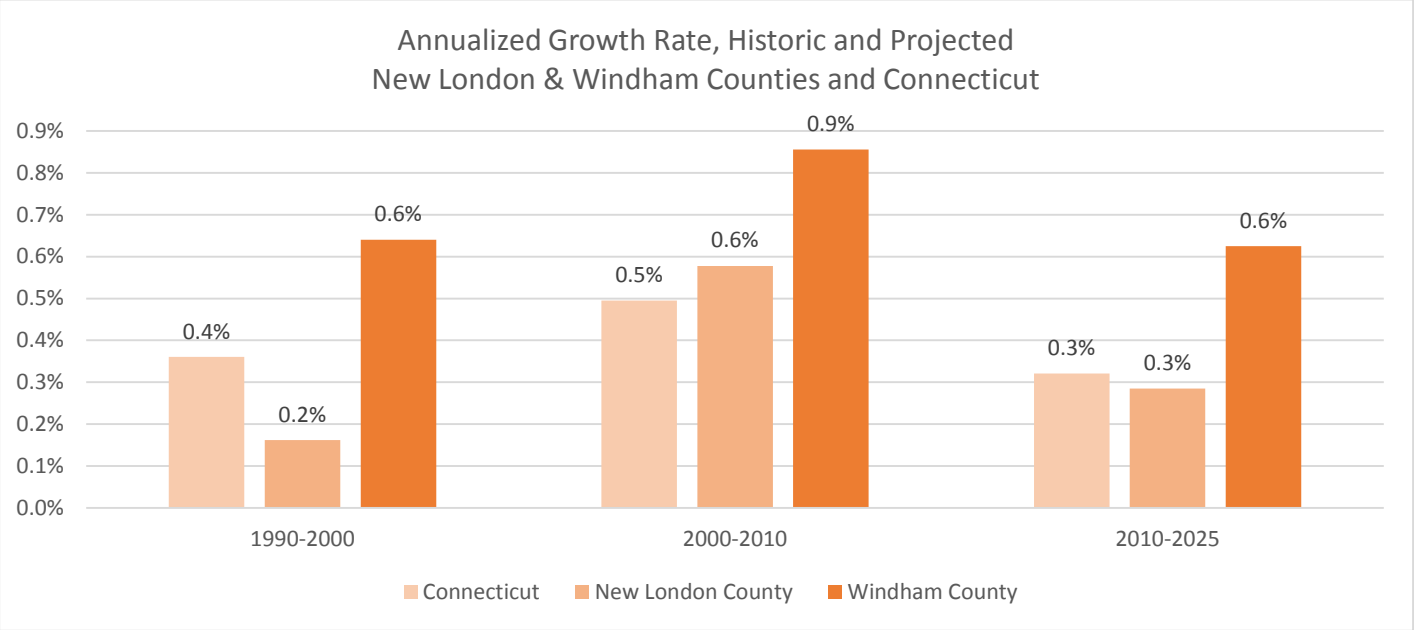


Figure 37. Annualized Growth Rates, Historic and Projected.
Source: U.S. Census, Connecticut State Data Center.

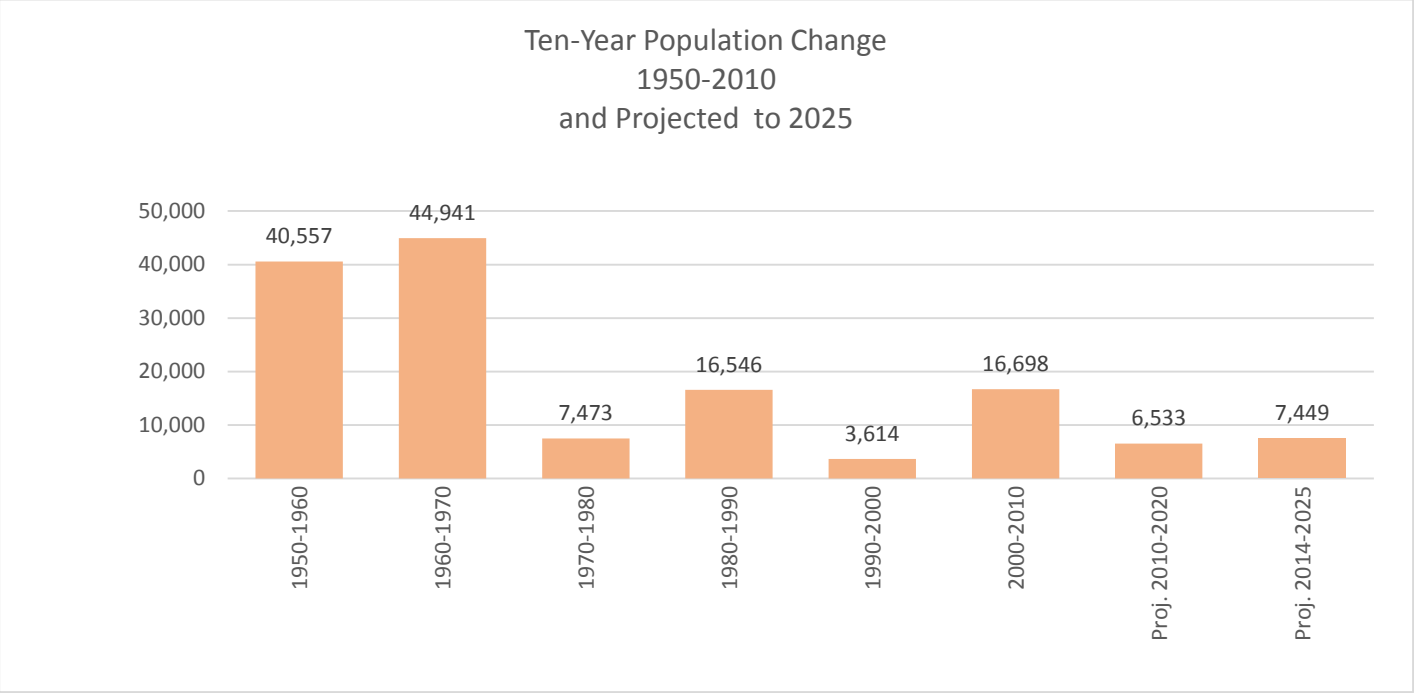


Figure 38. Historic and Projected Ten-Year Change in Population for the SCCOG Region.
Source: U.S. Census, Connecticut State Data Center.

Figure 39. Historic and Projected Population for Individual Municipalities.
Source: U.S. Census, Connecticut State Data Center.

Projected Increase in Older Adults

The aging of the region's baby boomers, combined with some in-migration of senior residents, will increase the share of seniors in all of the region's towns. In 2025, it will be common for 20% or more of a community's residents to be over the age of 65, with an accompanying decline in school-aged children. An aging population is associated with greater demand for handicapped-accessible home features as well as increased personal care needs. Personal transportation also becomes difficult. According to AARP, men outlive their ability to safely drive by seven years on average and women live 10 years on average beyond their ability to safely drive. A survey conducted for Connecticut's Legislative Commission on Aging shows that about 20% of Connecticut residents aged 50 and older anticipate using public transit more frequently as they age.[2] The same survey also found that two-thirds of Connecticut residents believe that their community is not doing enough to help residents who want to stay in their homes as they get older.[3]

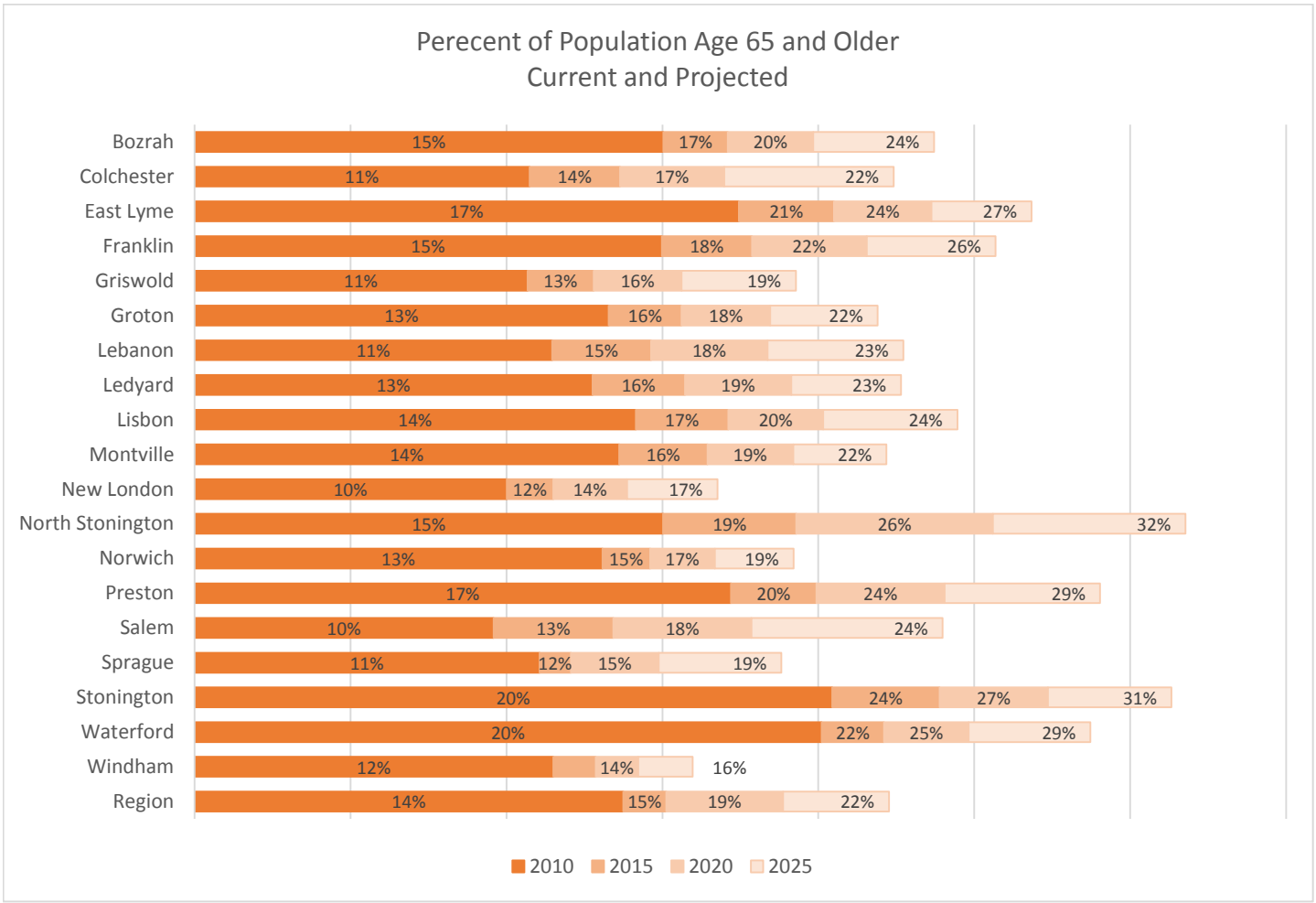
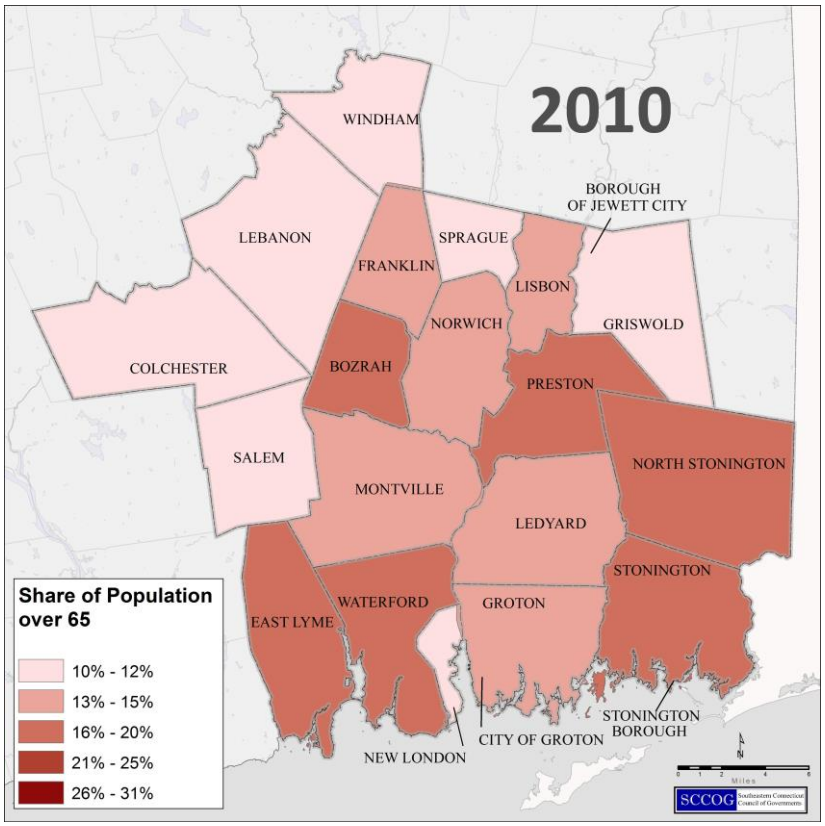


Figure 40. Share of Municipal Population Age 65 and Older, 2010-2025.
Source: Connecticut State Data Center.

[2] Connecticut's Legislative Commission on Aging, May 2015. "Transportation Policy Brief."

[3] Connecticut's Legislative Commission on Aging, October 2015. "Housing Report."



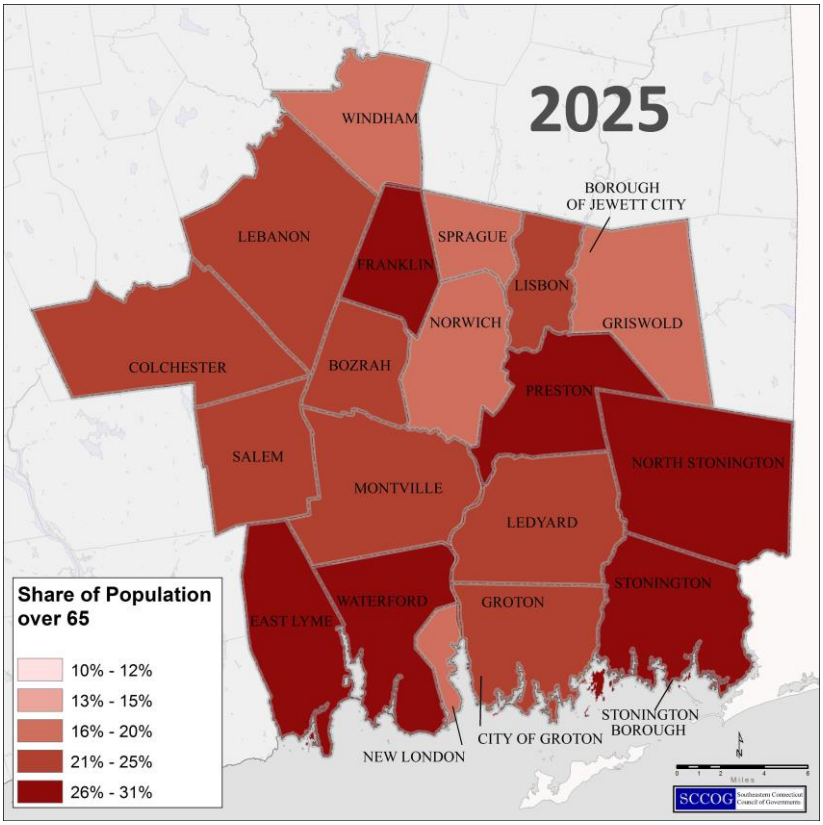


Figure 41. Share of Residents 65 and Older in 2010 and Projected Share of Seniors in 2025.
Source: U.S. Census, Connecticut State Data Center.

Decline in Children

The population of children aged 5-19 is expected to decline by 10% state-wide between 2010 and 2025, and will decline by 15% in southeastern Connecticut, according to population estimates developed by the Connecticut State Data Center that project future population based on expected births and migrations.

Many southeastern Connecticut towns contract with individual providers to develop more detailed projections for school enrollment, and while figures differ, they show a consistent decline in the school-aged population.[4]

Projected School-Aged Children (5-19)

	2010 Census	Proj. 2015	Proj. 2020	Proj. 2025	Projected % Change, 2010-2025
Bozrah	494	496	474	440	-11%
Colchester	3,719	3,612	3,071	2,656	-29%
East Lyme	3,308	3,088	2,671	2,248	-32%
Franklin	372	366	329	284	-24%
Griswold	2,357	2,323	2,289	2,193	-7%
Groton	6,732	6,306	5,894	5,789	-14%
Lebanon	1,552	1,549	1,382	1,230	-21%
Ledyard	3,157	3,171	2,768	2,395	-24%
Lisbon	911	850	702	633	-31%
Montville	3,518	3,594	3,333	3,112	-12%
New London	5,797	4,813	4,212	3,836	-34%
N. Stonington	963	975	826	642	-33%
Norwich	7,544	7,512	7,454	7,571	0%
Preston	854	826	767	668	-22%
Salem	928	926	789	667	-28%
Sprague	599	633	661	613	2%
Stonington	3,280	3,274	2,937	2,569	-22%
Waterford	3,611	3,548	3,171	2,724	-25%
Windham	5,728	5,413	5,048	4,970	-13%
Region	53,275	53,275	48,778	45,240	-15%

Table 2. Current Population of School-Aged Children and Projected Change in Population.
Source: U.S. Census, Connecticut State Data Center.

[4] New London Public Schools' Enrollment Projection Report projects a more than 25% increase in enrollment from 2015 to 2023, primarily due to increased enrollment from residents of other towns in that city's magnet schools.

ECONOMY


Downtown New London, Foxwoods Resort & Casino, Electric Boat New London Campus.
Sources: Foxwoods: Wikipedia user Folks at 137. Electric Boat: www.gdeb.com.

CURRENT EMPLOYMENT

Southeastern Connecticut's economy continues to be heavily dependent on a few major industries—particularly gaming, military employment, manufacturing, and tourism-related accommodation and food services (Figure 42). In 2013, New London County took in $2.25 billion in revenue from tourism, 27% of the total amount tourism brought into the state that year (New London County has only 8% of the state's residents).[5]

Southeastern Connecticut was particularly hard-hit by the recession, with the region losing 11,000 jobs since 2008, primarily due to job cuts at the two casinos. The region has been slow to recover. While statewide, 89%

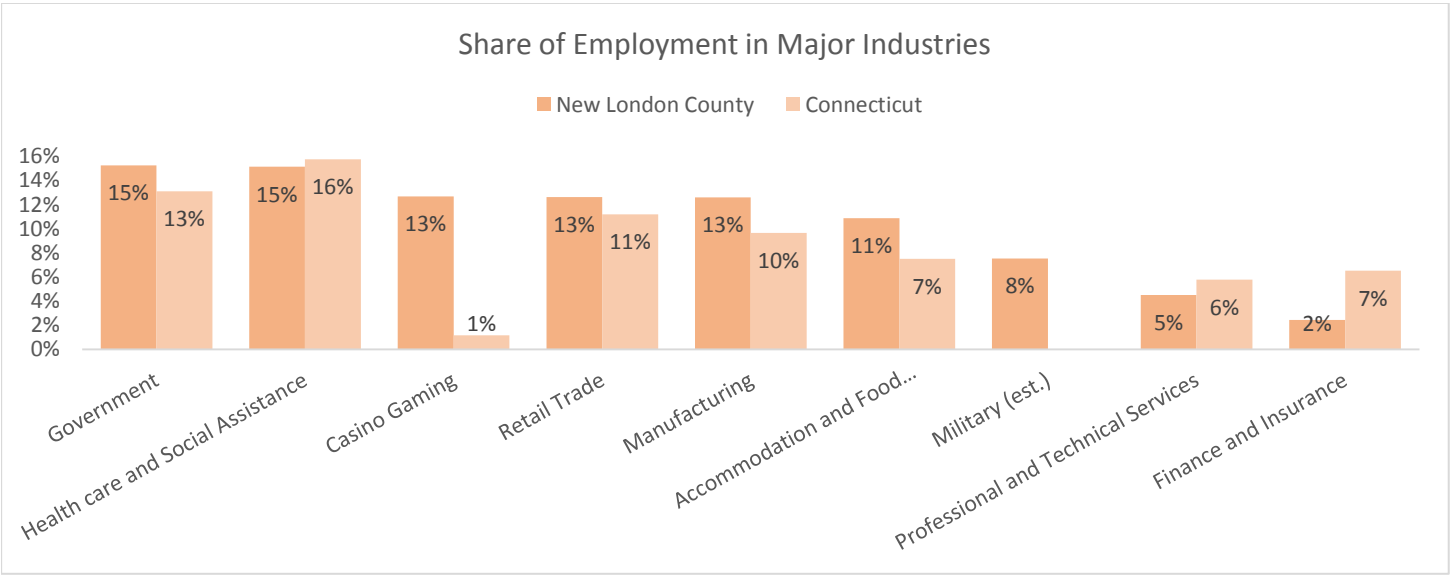


Figure 42. Share of Employment in Major Industries.
Source: 2014 Quarterly Census of Employment and Wages. Military employment is not reported in QCEW, here estimated by SCCOG at ~8,500 jobs.

[5] Economic Impact Study on Travel in Connecticut.

of all jobs during the recession have since been regained, southeastern Connecticut has only recovered eight percent of its pre-2008 employment.[6]

A slightly higher share of the region's jobs are located in urban communities than is population, with 56% of the region's jobs located in the four urban communities, compared to 46% of the population living there (Table 3). High concentrations of jobs are present in Willimantic (Windham), Montville, Ledyard, Groton, New London, and Norwich. Increases in employment are anticipated in Groton and New London, where several thousand new jobs are expected to be created to meet orders for submarines by the U.S. Navy.

Jobs in Southeastern Connecticut Municipalities		
Bozrah		1,100
Colchester		4,285
East Lyme		6,355
Franklin		990
Griswold		2,115
Groton		33,680
Lebanon		1,280
Ledyard		13,220
Lisbon		1,685
Montville		13,535
New London		19,240
North Stonington		1,420
Norwich		18,975
Preston		710
Salem		685
Sprague		730
Stonington		8,640
Waterford		9,645
Windham		11,325
Region		149,615
Urban	83,220	56%
Suburban	60,210	40%
Rural	6,185	4%

Table 3. Southeastern Connecticut Jobs by Municipality.
Source: 2006-2010 Census Transportation Planning Package. Job counts are self-reported as part of the American Community Survey and may not match other data sources.

[6] "Casino-study bill a response to eastern Connecticut's jobs outlook." The Day, February 23 2016.

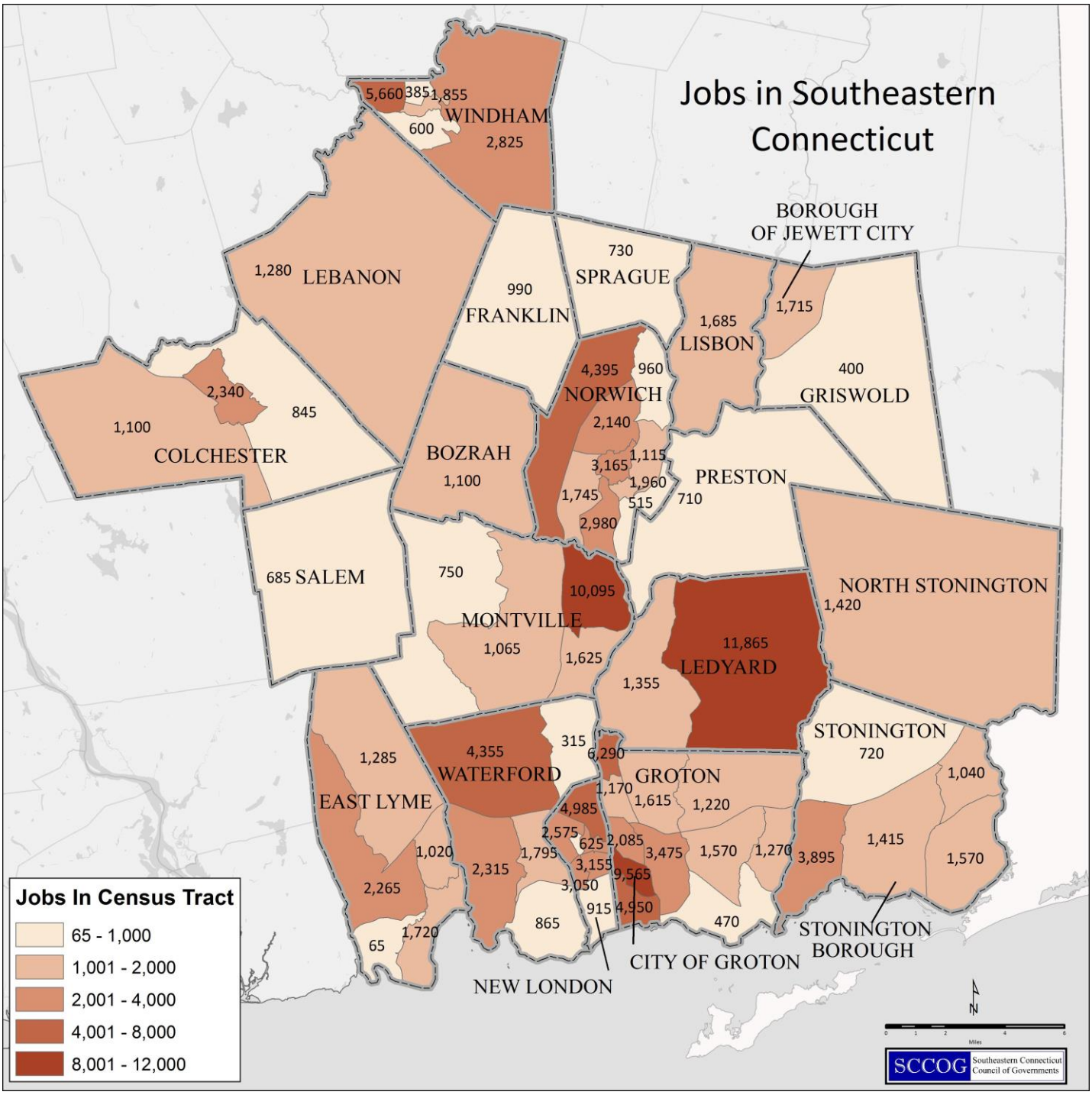


Figure 43. Southeastern Connecticut Jobs by Census Tract.
Source: 2006-2010 Census Transportation Planning Package.

Projected Employment Growth

Ten-year employment forecasts for the state and region are developed by the Office of Research of the State of Connecticut Department of Labor (CT DOL). Agency staff examine historical trends and other forecasts, including forecasts of industry growth nationally, to predict future changes in Connecticut employment. The most recent available projections are for changes between 2012 and 2022.

Overall, employment in eastern Connecticut is projected to grow by more than 13,000 jobs over a ten-year period. The industries that are projected by CT DOL to grow the most in the region in terms of employment are Health Care and Social Assistance and Educational Services. Health care is a rapidly-growing industry across the country, partly due to changes within the industry that have expanded employment and partly because of the increasing needs of an aging population.

CT DOL projections indicate that manufacturing employment is expected to increase in eastern Connecticut on the order of 1,500 jobs over 10 years. These numbers do not specifically reflect the expected hiring at Electric Boat due to shipbuilding contracts that the firm was recently awarded. Electric Boat has stated that it expects to hire 14,000 workers over the next ten years to fill new jobs and to replace the approximately 35% of EB workers expected to retire from its facilities in Groton, New London, and North Kingstown, RI.

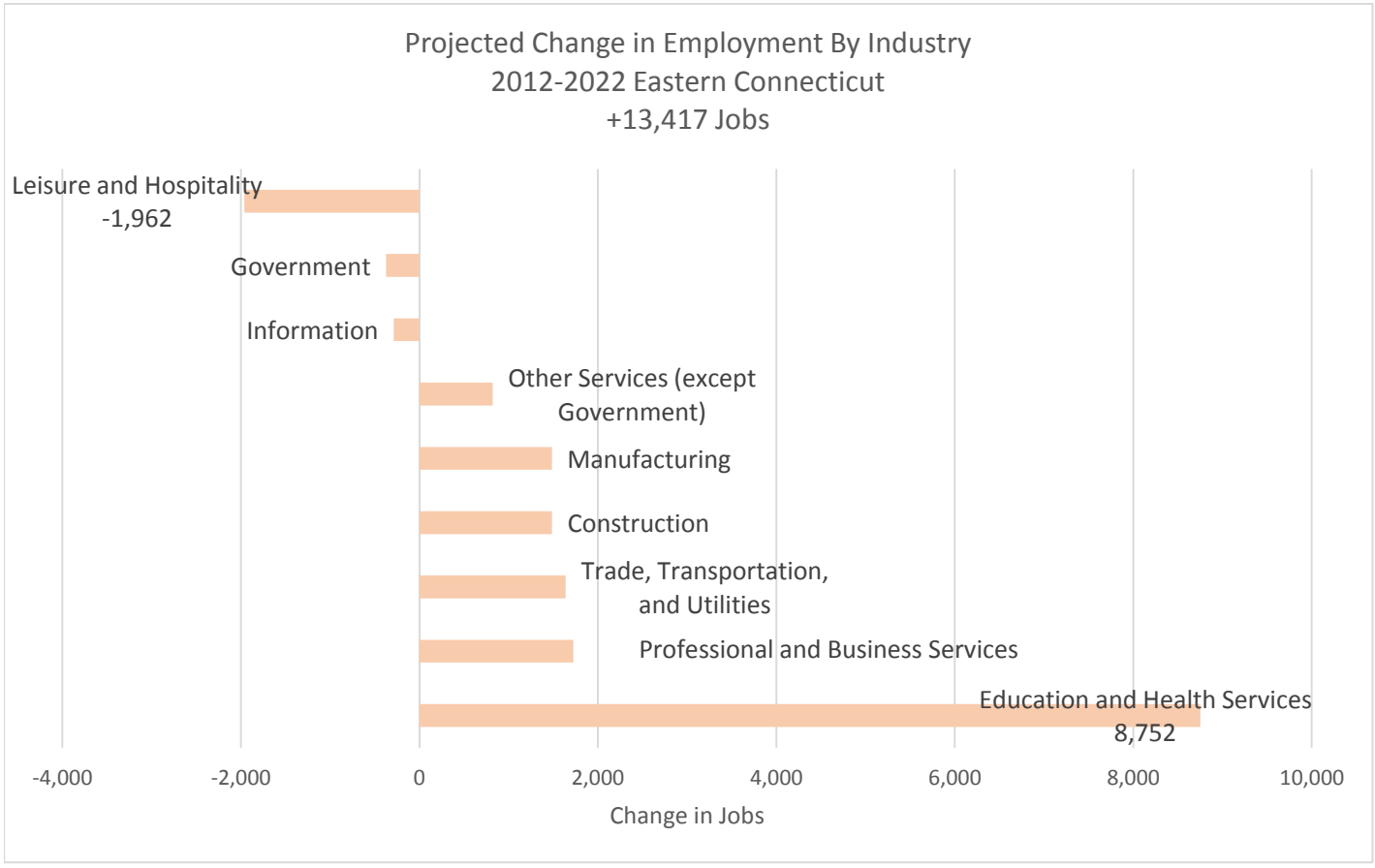


Figure 44. Projected Change in Employment by Industry, 2012-2022, Eastern Region (includes NE Connecticut). Industry chart excludes industries projected to change less than +- 200 jobs. Source: State of Connecticut Department of Labor.

Demand for Labor

Population projections prepared by the Connecticut State Data Center, calculated based on demographic trends and patterns of past migration into and out of the region, suggest that the region will be unable to meet future workforce needs. The State Data Center numbers predict a declining overall workforce, even as losses in age 20-64 year old workers who leave the area or age into retirement are partially offset by the share of 65+ adults who can be expected to continue to work. Overall, there is a gap of about 14,000 workers between the new jobs projected for the area and the projected workforce.

Demand for Commercial and Industrial Space

An analysis of demand for different types of commercial development in Groton, prepared by the consulting firm Camoin Associates, concluded that future demand for general office space in the region was negligible, at just 7,000 rentable square feet over the next ten years.[7] Space needs will increase for the healthcare industry, where additional employment and changes to medical facility needs will demand almost 240,000 square feet of medical space in the region. Camoin noted that a lack of developable sites with public utilities is an impediment to additional industrial development.

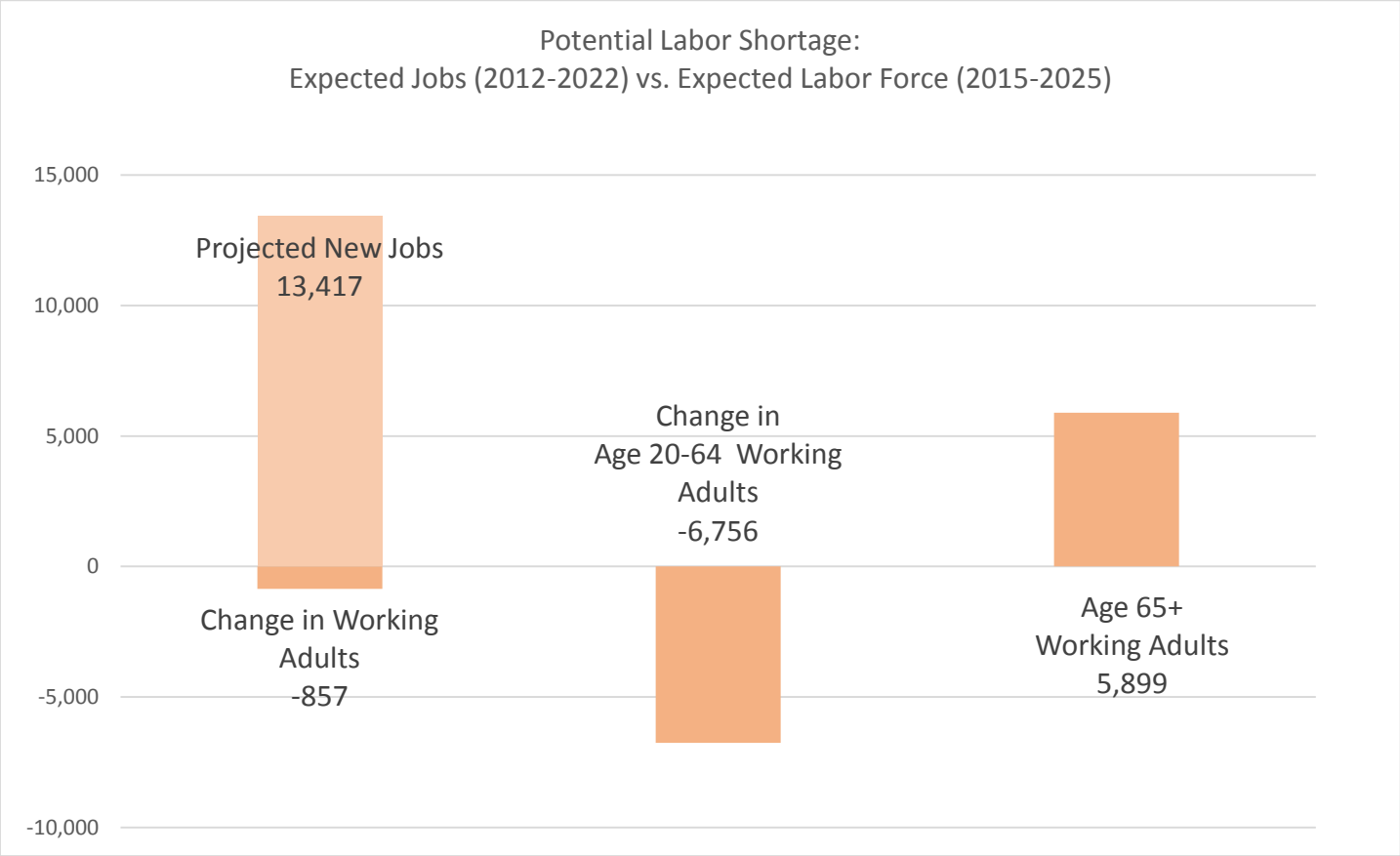


Figure 45. Projected Changes in Employment and Workforce Population.
Source: SCCOG calculations using data from Connecticut Department of Labor and Connecticut State Data Center.

[7] Camoin Associates, Economic and Market Trends Analysis for the Town of Groton, CT. December 2015. Working Draft.

HOUSING


Crocker House, New London; New Single-Family Home in Waterford; Single-Family Homes in Lisbon. Sources: SCCOG, realtor.com.

TYPES OF HOUSING

The types of housing available in southeastern Connecticut's suburban, rural, and urban communities reflect the eras in which the housing was built. While region-wide, 38% of the overall housing stock is in buildings other than single-family homes, these units are disproportionately concentrated in urban neighborhoods, which contain 75% of all multifamily housing in the region. Seasonal homes make up 4% of the region's housing inventory, twice the state-wide rate. Most of the region's seasonal/second homes (68%) are located in East Lyme, Groton, Stonington, and Lebanon.

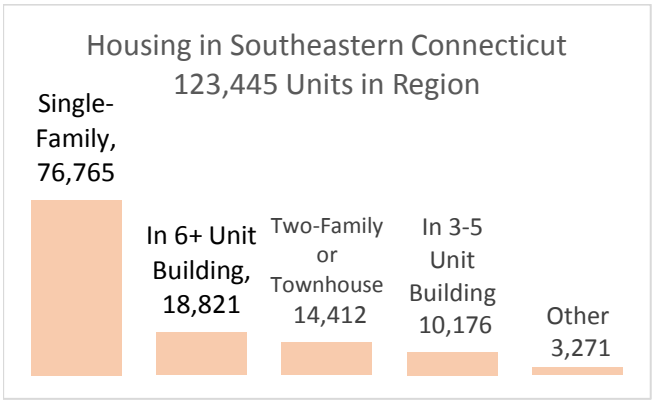


Figure 46. Housing in Southeastern Connecticut by Unit Type.
Source: 2014 Five-Year American Community Survey.

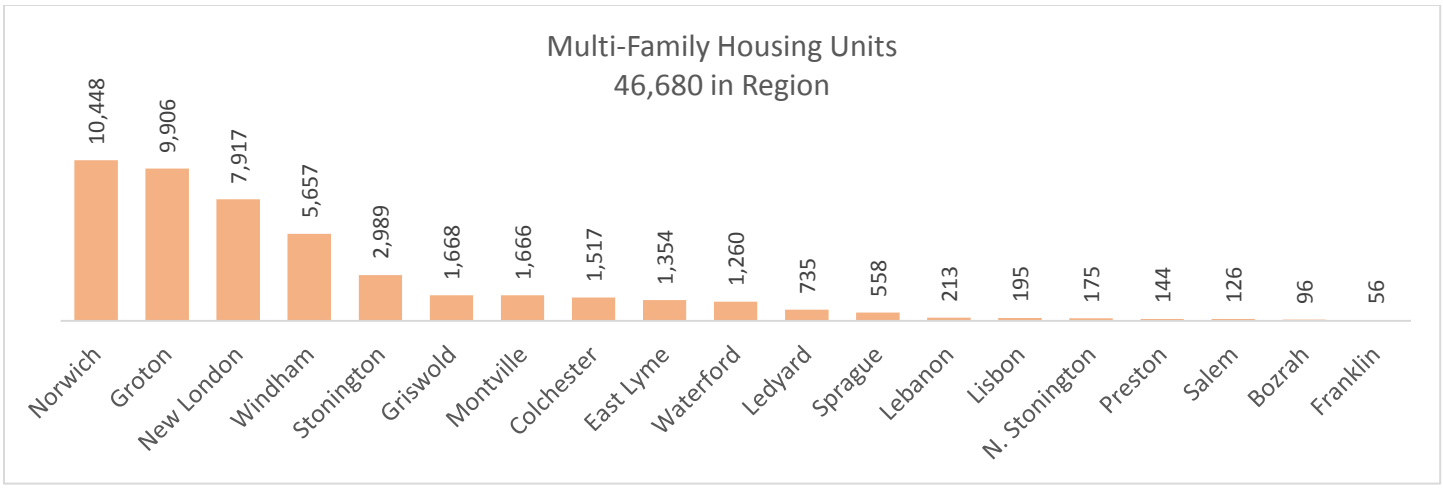


Figure 47. Housing Units in Multifamily Buildings (Townhouses, other, and 2+ units per structure, includes mobile homes).
Source: 2014 Five-Year American Community Survey.

Age of Housing

Southeastern Connecticut's long history has left the region with a diverse inventory of housing, including early colonial homes in Norwich and New London as well as a large inventory of suburban homes built after World War II. Regionally, 30% of all homes were built before 1950, 39% between 1950 and 1980, 22% built between 1980 and 2000, and just 9% since 2000 (Figure 48). The largest number of pre-1950s homes are in the region's four cities, but are common throughout the region.

Each phase of home building produced different designs and building technologies that can now present challenges for today's households. Homes built in previous decades may have poor insulation or rely on inefficient heating systems. Homes without first-floor bedrooms and bathrooms may be difficult for aging residents to live in as they require additional handicapped features. The value of a home generally declines, relative to other homes, as it ages and its features become less desirable to current households.

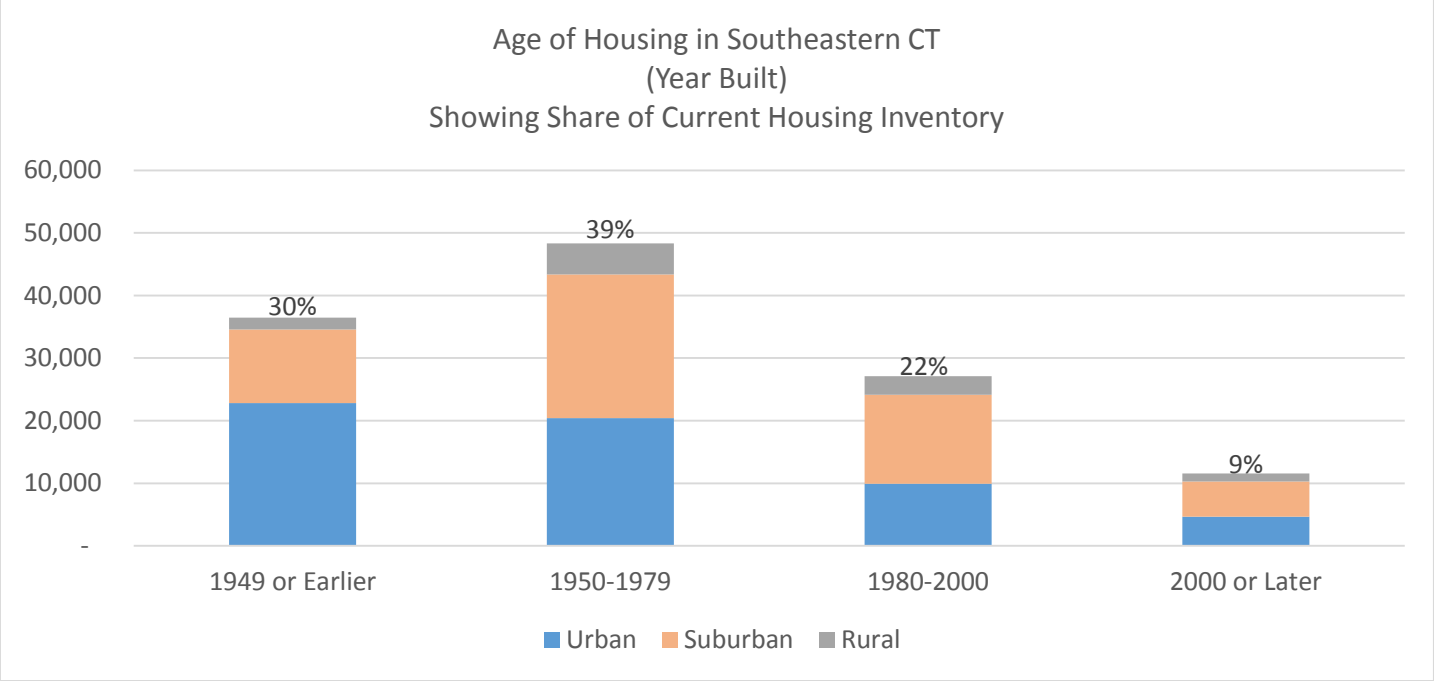


Figure 48. Age of Housing (Year Built).
Source: 2014 Five-Year American Community Survey.

Housing Production

Housing construction in recent decades has lagged far behind levels seen during previous decades (Figure 49). Annual housing production during the 1970s outpaced even the rate seen in the housing-boom-peak year of 2004, when 1,200 building permits were issued for new homes. Single-family housing construction has historically outpaced multifamily by a ratio of 4:1 (Figure 50), but in 2014 more multifamily units were permitted in the region (358) than single-family. The bulk of recent construction has occurred in Norwich, Groton, and East Lyme, which together accounted for 40% of all housing built in the region since 2000 (Table 4).

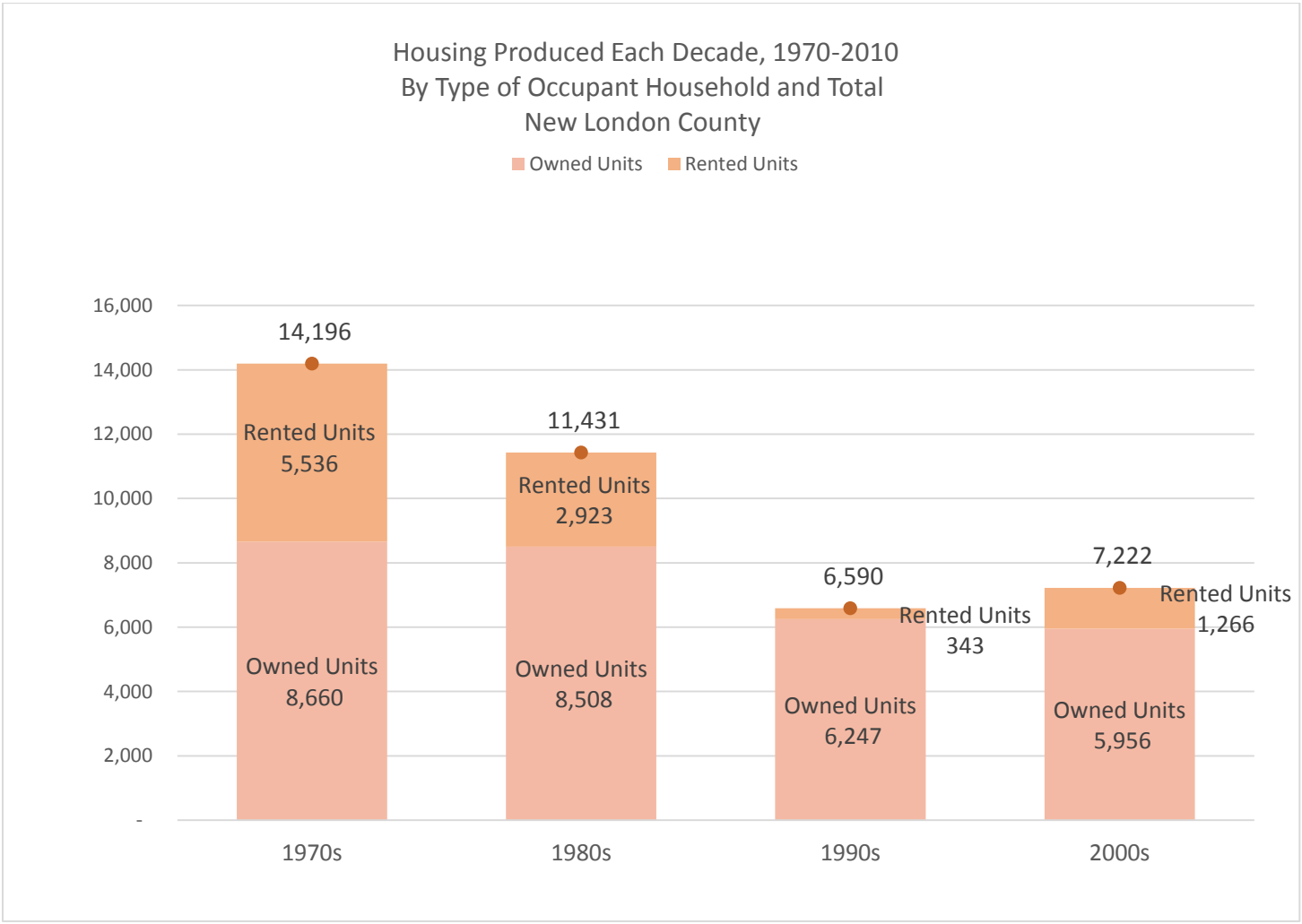


Figure 49. New Occupied Housing Units, 1970-2010, New London County.
Source: U.S. Decennial Census.

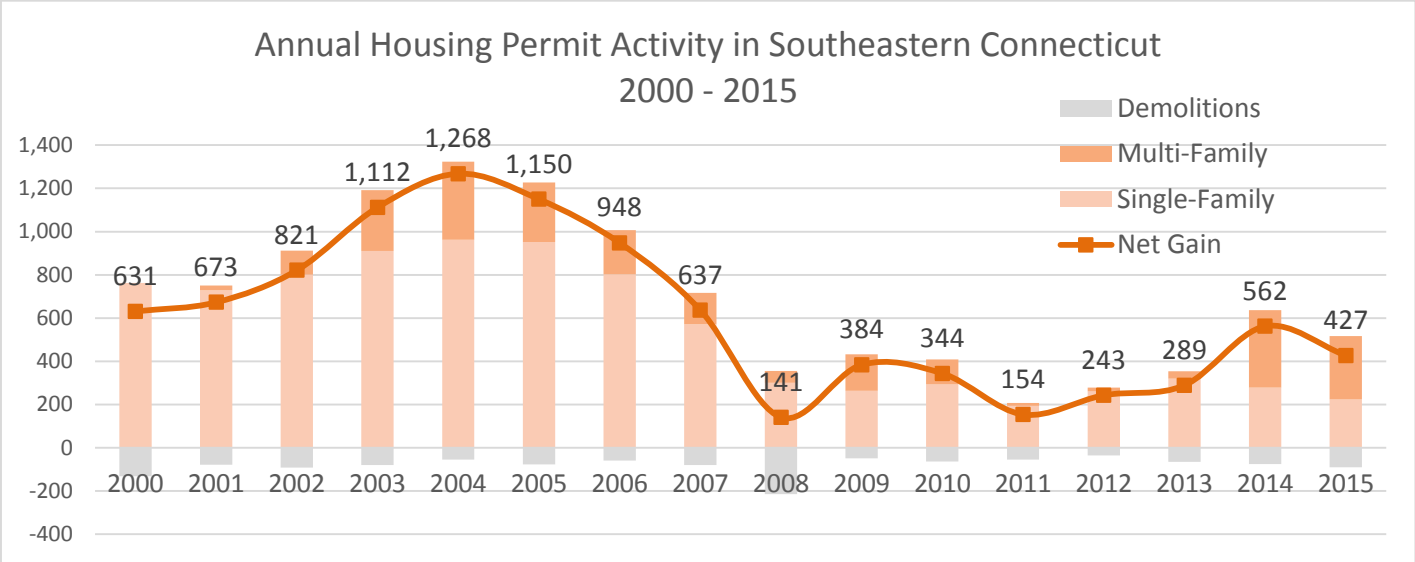


Figure 50. Housing Permits Awarded in Southeastern Connecticut, 2000-2015.
Source: State of Connecticut Department of Economic and Community Development.

Housing Permits Granted, 2000-2015

	Net Gain	Permitted Units	Single Family	Multi-Family (2+)	Demo-litions	Regional Share		
						Net Gain	Single-Family	Multi-Family
Bozrah	96	99	99	0	3	1%	1%	1%
Colchester	835	865	813	52	30	9%	8%	9%
East Lyme	1,307	1,459	863	596	152	13%	13%	10%
Franklin	92	93	66	27	1	1%	1%	1%
Griswold	480	552	528	24	72	5%	5%	6%
Groton	1,235	1,359	826	533	124	13%	12%	10%
Lebanon	333	367	365	2	34	3%	3%	4%
Ledyard	504	536	488	48	32	5%	5%	6%
Lisbon	157	166	166	0	9	2%	1%	2%
Montville	485	647	591	56	162	5%	6%	7%
New London*	509	618	618	0	109	5%	6%	7%
North Stonington	228	242	242	0	14	2%	2%	3%
Norwich	1,243	1,490	740	750	247	13%	13%	9%
Preston	226	250	245	5	24	2%	2%	3%
Salem	249	257	257	0	8	3%	2%	3%
Sprague	97	98	98	0	1	1%	1%	1%
Stonington	919	1,050	767	283	131	9%	9%	9%
Waterford*	469	583	583	0	114	5%	5%	7%
Windham	281	352	272	80	71	3%	3%	3%
Region	9,745	11,083	8,627	2,456	1,338			

Table 4. Housing Permits Granted from 2000-2015, by Municipality.
**Asterisk indicates a likely misreporting of data in which all housing units, regardless of type, were reported as single-family. All multifamily permits reported in Waterford were issued in 2015.*
Source: State of Connecticut Department of Economic and Community Development.

HOUSING TENURE

The share of households in southeastern Connecticut communities that rent their homes ranges from a low of 6% in the rural community of Salem to a high of 64% in New London, which has the lowest rate of home ownership in the region (Figure 51). Many current rental units are single-family homes that are indistinguishable from owner-occupied housing. About 20% of renters live in single-family homes and another 21% live in attached townhomes or two-family houses. Conversely, only 13% of owner-occupied homes are condominiums, townhouses, or other alternatives to single-family housing.

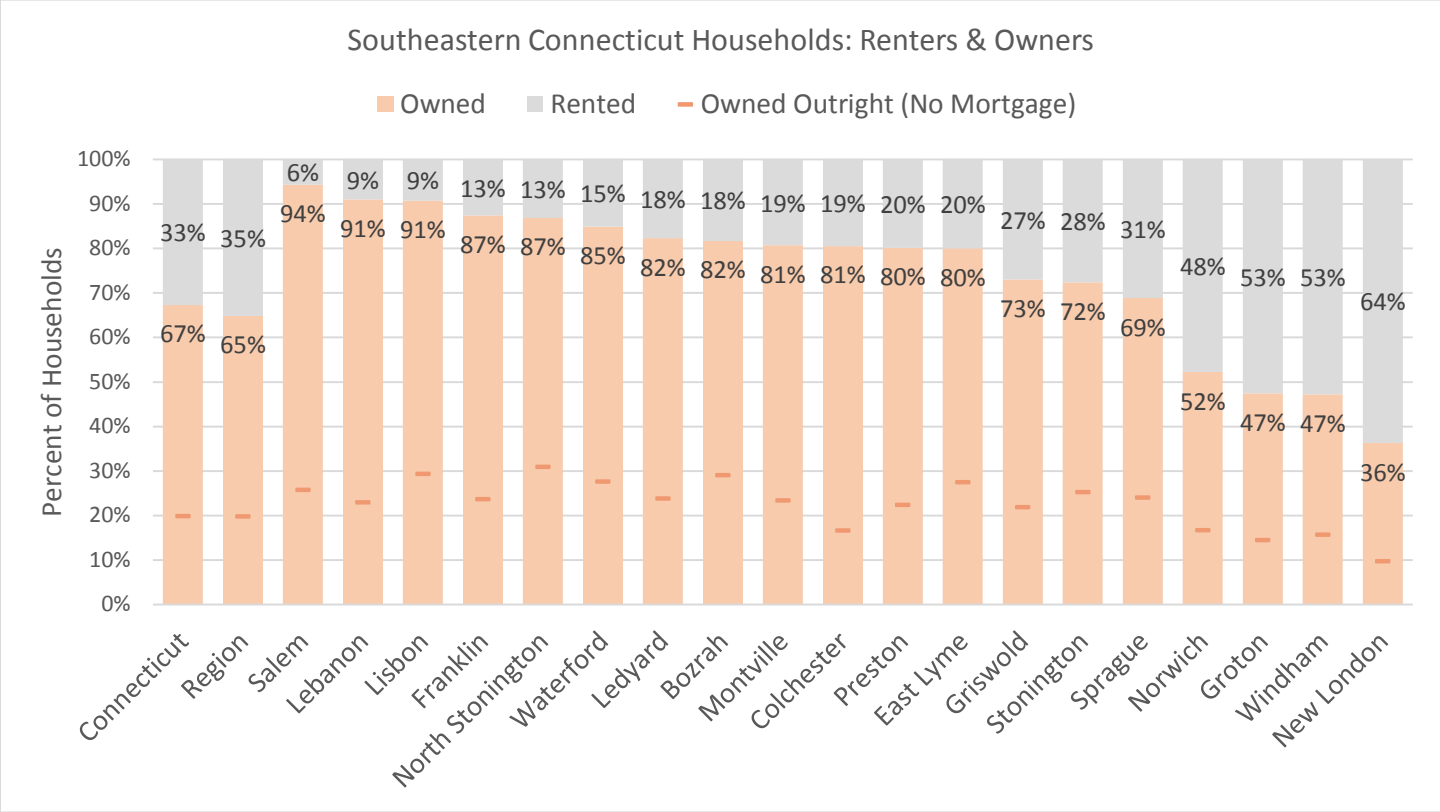


Figure 51. Housing Tenure.
Source: 2014 Five-Year American Community Survey.

Rental Housing

Apartments in southeastern Connecticut take many forms—from traditional and modern apartment buildings, to single-family homes, to the two-and three family houses that were built in the late nineteenth and early twentieth centuries. The region's four urban municipalities contain a disproportionate amount of the region's renters and rental housing, with two-thirds of overall units. Rural towns contain 5% of rental units, while the region's seven suburban towns have 28% of rental units (Figure 52). The highest number of lower-cost rental units (monthly rent <$800) are also present in the region's four urban communities. A 2013 analysis of zoning in towns across the State of Connecticut found that only four of southeastern Connecticut's municipalities allow for multifamily housing development as an as-of-right use under zoning (Norwich, New London, East Lyme, and Waterford). Another twelve allow multifamily housing under certain conditions, and three do not allow any multifamily housing (Lisbon, Franklin, and Bozrah).[8]

Renters in southeastern Connecticut are more likely to be cost-burdened by housing than owners, with more than half of renters paying more than 30% of their income toward housing, a standard measure of housing affordability. Most rent-burdened households now pay more than 35% of their income towards rent (Figure 53)

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[8] Connecticut Zoning Initiative. Collaboration between the Connecticut Fair Housing Center and the Cities Suburbs & Schools Project at Trinity College. Information current as of May 2013. Analysis is expected to be updated in 2015. http://commons.trincoll.edu/cssp/zoning/.

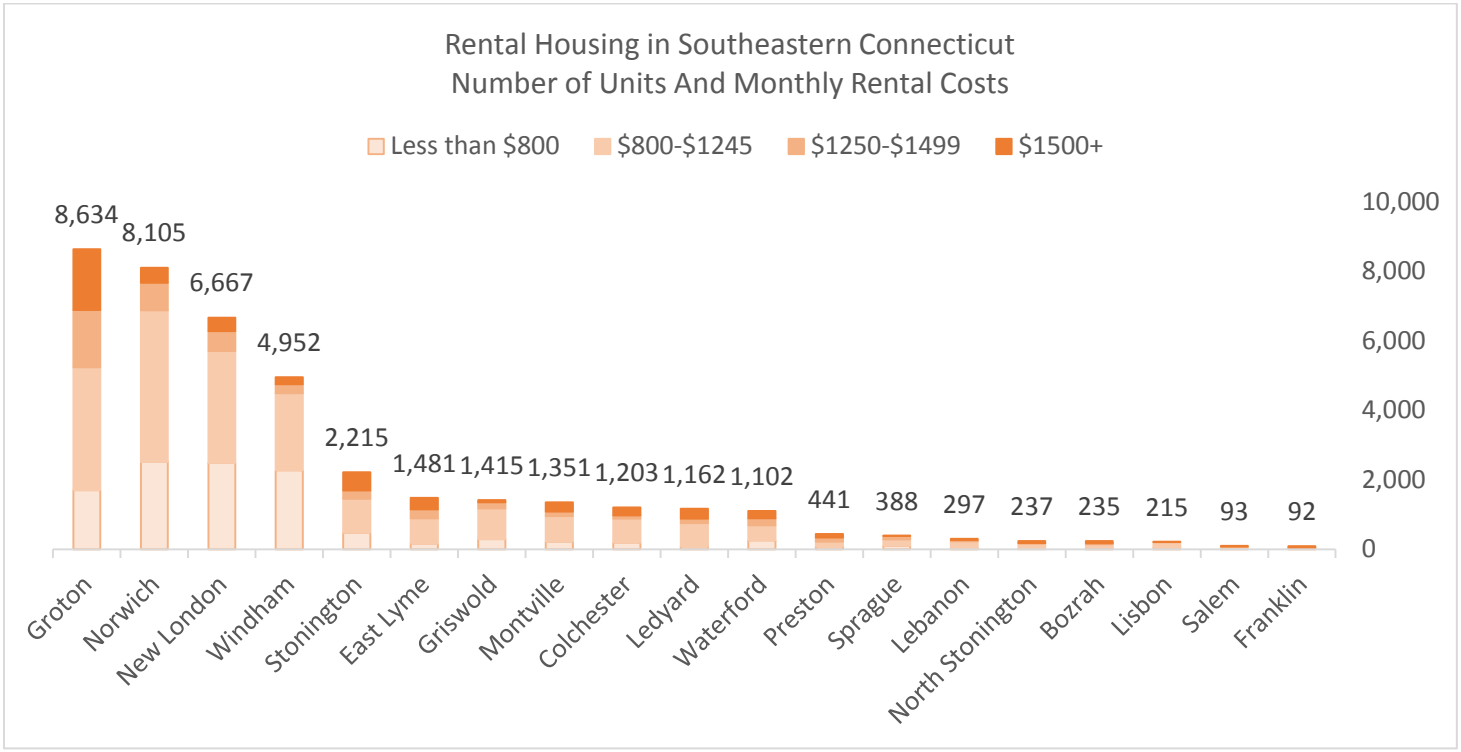


Figure 52. Rental Units in SCCOG Region.
Source: 2014 Five-Year American Community Survey

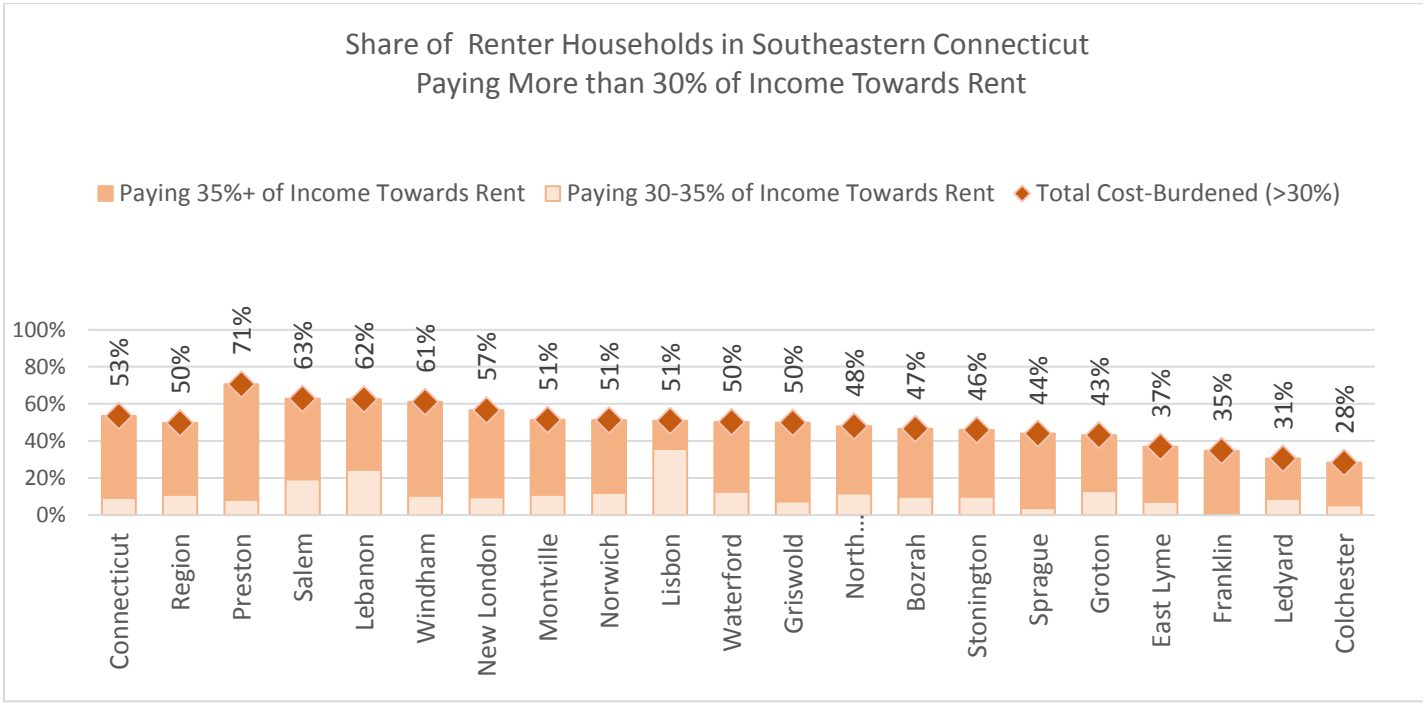
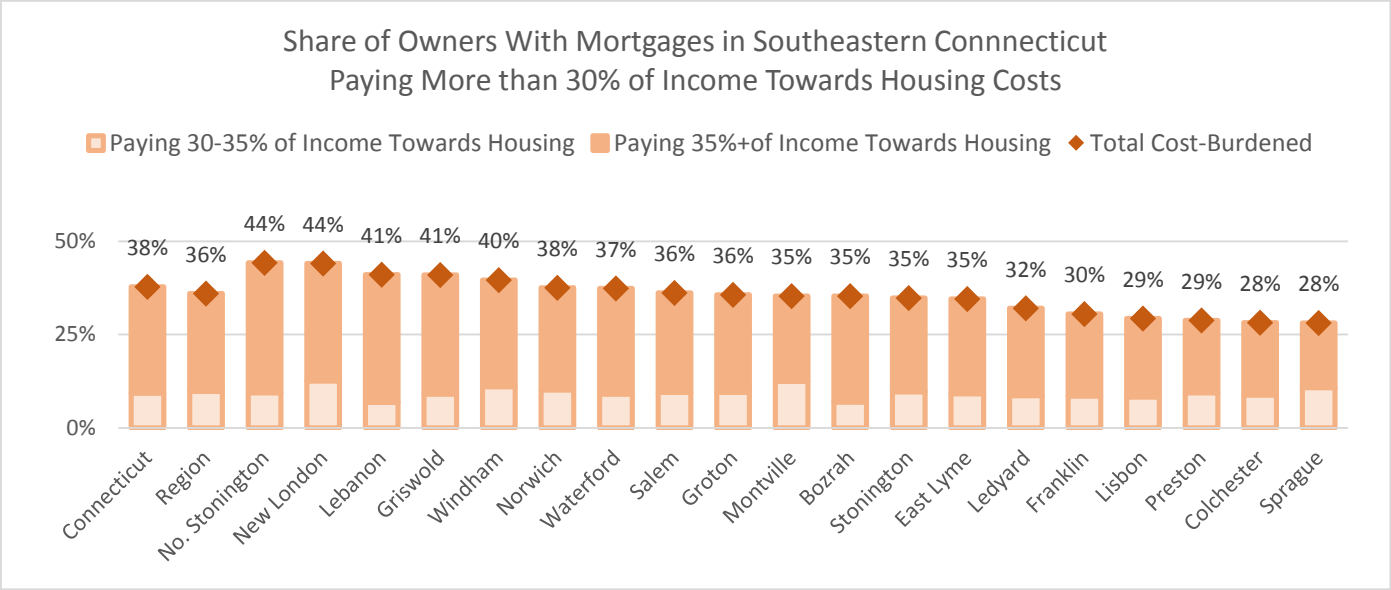


Figure 53. Share of Income Paid Towards Rent.
Source: 2014 Five-Year American Community Survey.

Home Ownership

Housing costs are unaffordable for about one-third of households in southeastern Connecticut that own their own homes. Even owners who have paid off their mortgages face monthly housing costs which include homeowner's insurance, utilities, and property taxes. These costs are unaffordable for about a fifth of households without mortgages. Overall, 37% of the region's households (owners and renters) are cost-burdened, paying more than 30% of their income for housing.



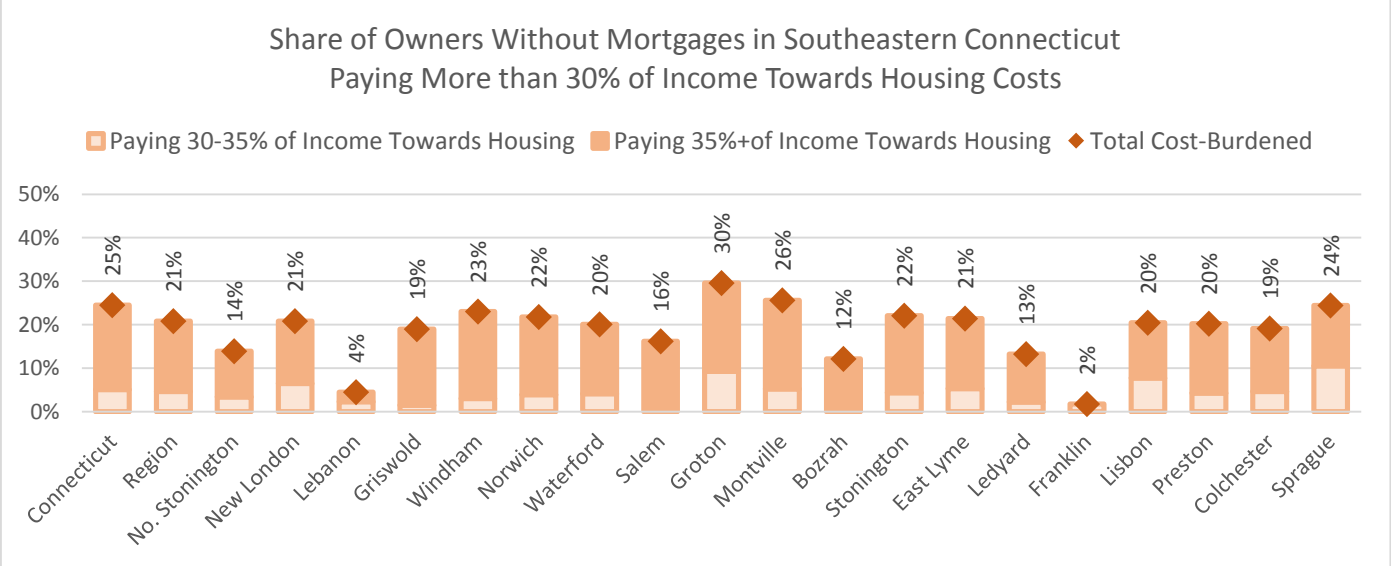


Figure 54. Share of Income Paid Towards Housing.
Source: 2014 Five-Year American Community Survey.

Entry-level homes

Entry-level homes valued between $100,000 and $200,000 are present in all of the region's municipalities, but are most plentiful in Norwich, Windham, Montville, and New London. An additional 5,419 homes are valued at less than $100,000, but many of these may require significant repairs.

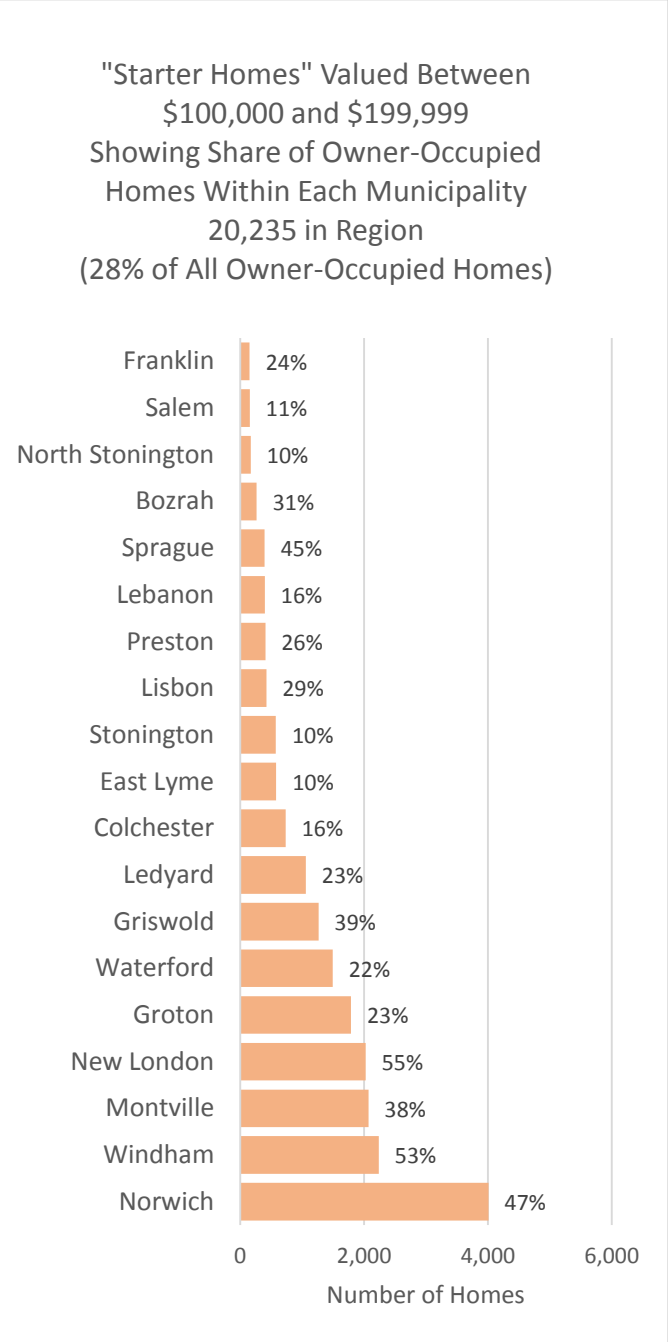


Figure 55. Owner-Occupied Homes Valued Between $100,000 and $199,999.
Percentages show how much of a community's total owner-occupied housing is valued between $100,000 and $199.999. Source: 2014 Five-Year American Community Survey.

Income-Restricted Affordable Housing

Government-subsidized affordable multifamily housing is most common in the municipalities of Windham, Norwich, New London, and Groton (Table 5, Table 5Figure 56). Region-wide, a quarter of subsidized units are reserved for families while the rest are restricted to elderly or handicapped residents.

Connecticut's Affordable Housing Land Use Appeals law (CGS 8-30g) provides a mechanism for developers wishing to build mixed-income housing to bypass local zoning restrictions (in some cases) in towns where less than ten percent of housing qualifies as affordable to households earning 80% or less of area median income through assistance from government subsidies, financing programs, or other deed restrictions.

Only the region's four urban communities of New London, Norwich, Groton, and Windham qualify as exempt communities under 8-30g. Colchester and Griswold are each just under the threshold, at 9% of housing units. Three-year temporary exemptions (moratoria) from 8-30g appeals may also be granted to towns who add affordable housing equaling 2% of total housing units, plus additional criteria. The majority of assisted units within the region are supported through direct government operating or financing subsidies such as public housing assistance or Low Income Housing Tax Credit financing. Very few towns contain privately-financed, deed-restricted affordable units.

Affordable Housing in Southeastern Connecticut						
	Number of Affordable Units	Percent of Total Housing Meeting Affordability Criteria	Housing Program in Use			
			Govt. Assisted	Tenant Assistance	CHFA/USDA Mortgages	Deed Restrictions
Windham	2,992	31%	1,862	596	534	-
New London	2,777	23%	1,709	449	517	102
Groton	4,076	23%	3,588	93	385	10
Norwich	3,576	19%	2,225	762	589	-
Griswold	431	8%	148	74	209	-
Colchester	531	9%	364	34	133	-
Sprague	72	6%	20	13	39	-
East Lyme	534	6%	396	12	107	19
Franklin	48	6%	27	-	21	-
Montville	375	5%	81	37	257	-
Waterford	403	5%	123	21	259	-
Preston	90	4%	40	5	45	-
Stonington	471	5%	383	16	72	-
Ledyard	260	4%	32	6	222	-
Lebanon	109	3%	26	4	79	-
Lisbon	60	3%	2	-	58	-
Bozrah	33	3%	-	2	31	-
Salem	32	2%	1	-	31	-
N. Stonington	31	1%	-	2	29	-
Region	16,901	14%		2,126	3,617	131

Table 5. Affordable Housing Units in Southeastern Connecticut.
Source: 2014 Affordable Housing Appeals List, State of Connecticut Department of Housing

Racially and Ethnically Concentrated Areas of Poverty

The communities with the most affordable housing are also those in which residents suffer the most from economic and racial segregation. The United States Department of Housing and Urban Development (HUD) has recently established a measure to identify areas where both racial and economic segregation isolate minorities into specific neighborhoods. Residents in these "racially/ethnically concentrated areas of poverty" (R/ECAPs) are more than 50% non-white and are three times more likely to live in poverty than residents elsewhere in the region. R/ECAPS in southeastern Connecticut are located in Norwich, Windham, and large sections of New London and Groton, the same municipalities where most affordable housing is located (Figure 56).

Recent HUD regulations require communities receiving Community Development Block Grant (CDBG) funds to proactively reduce segregation within the region, and especially to address the prevalence of racially and economically segregated communities (2015 Affirmatively Furthering Fair Housing rule).

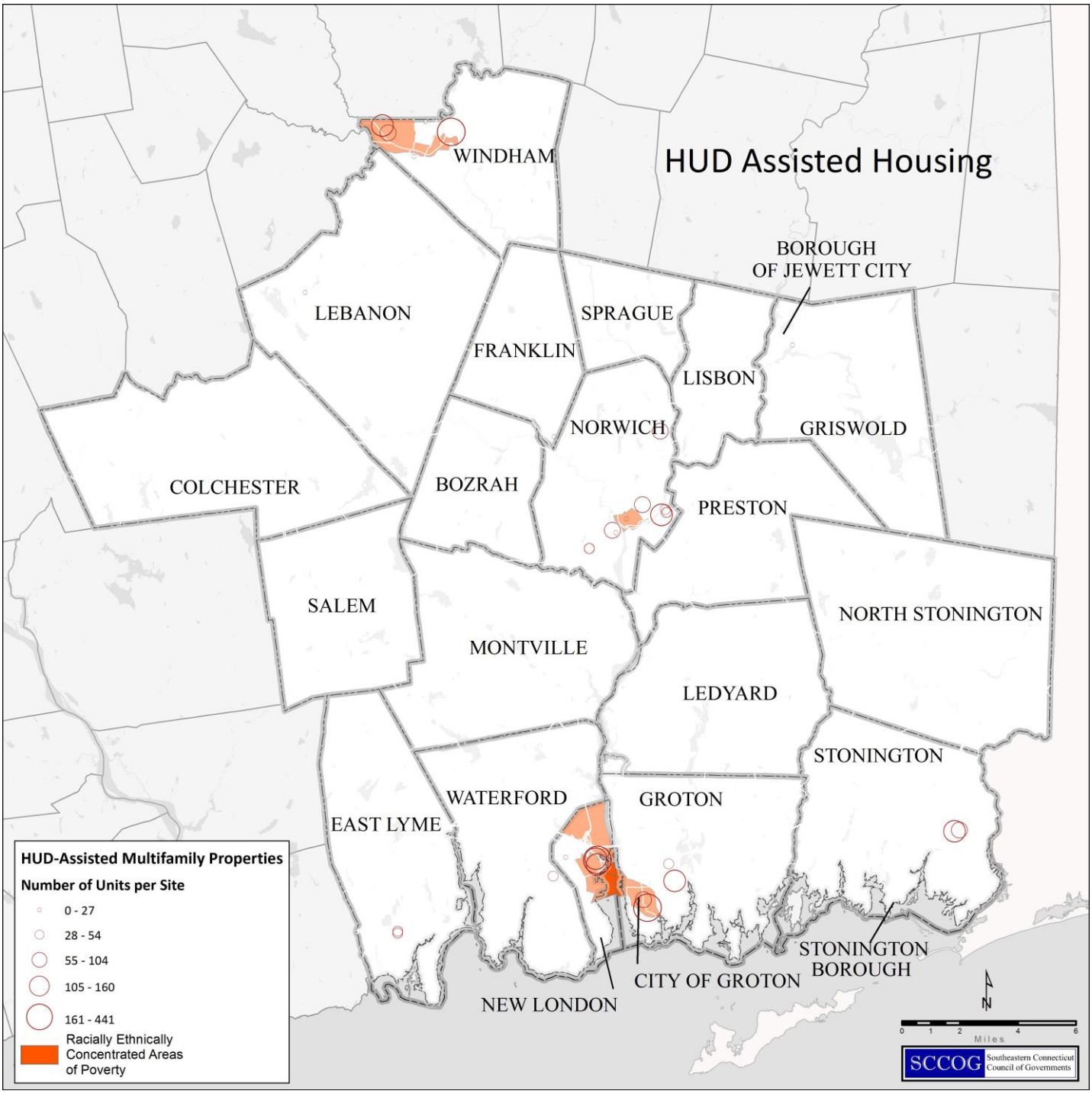


Figure 56. Locations of HUD-Assisted Multifamily Housing Units and Racially/Ethnically Concentrated Areas of Poverty. Source: U.S. Department of Housing and Urban Development via HUDUser and State of Connecticut 2015 Analysis of Impediments to Fair Housing Choice.

Future Demand for Housing

Demand for quality housing in southeastern Connecticut is expected to continue despite overall slow growth and a declining number of younger residents. By analyzing the predicted age profile of the region's future residents and their pattern of housing needs, we can estimate how many households there will be and how many additional housing units will be needed to house them. By 2025, the region will need over 10,000 new housing units to accommodate new and existing households, or just under 1,000 units per year (Figure 57). The aging of the region will mean more housing units will be needed to house smaller families, as one- and two-person households continue to increase in number and average household size continues to decline (Figure 58). Meeting this need would require returning to the high-production levels seen in the mid-2000s, prior to the Great Recession.

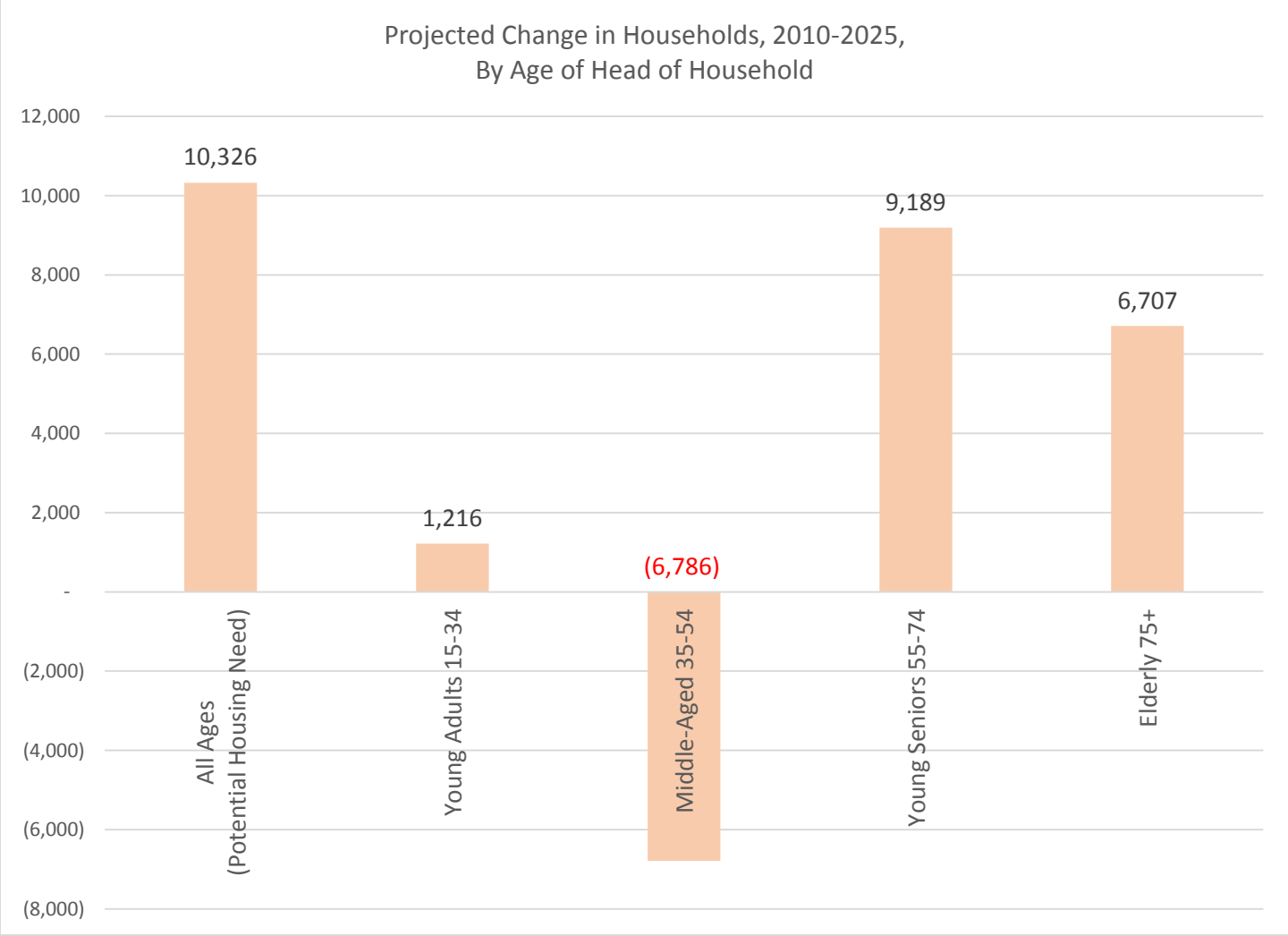


Figure 57. Projected Change in the Number of Households in Southeastern Connecticut, 2010-2025, by Age of Head of Household.

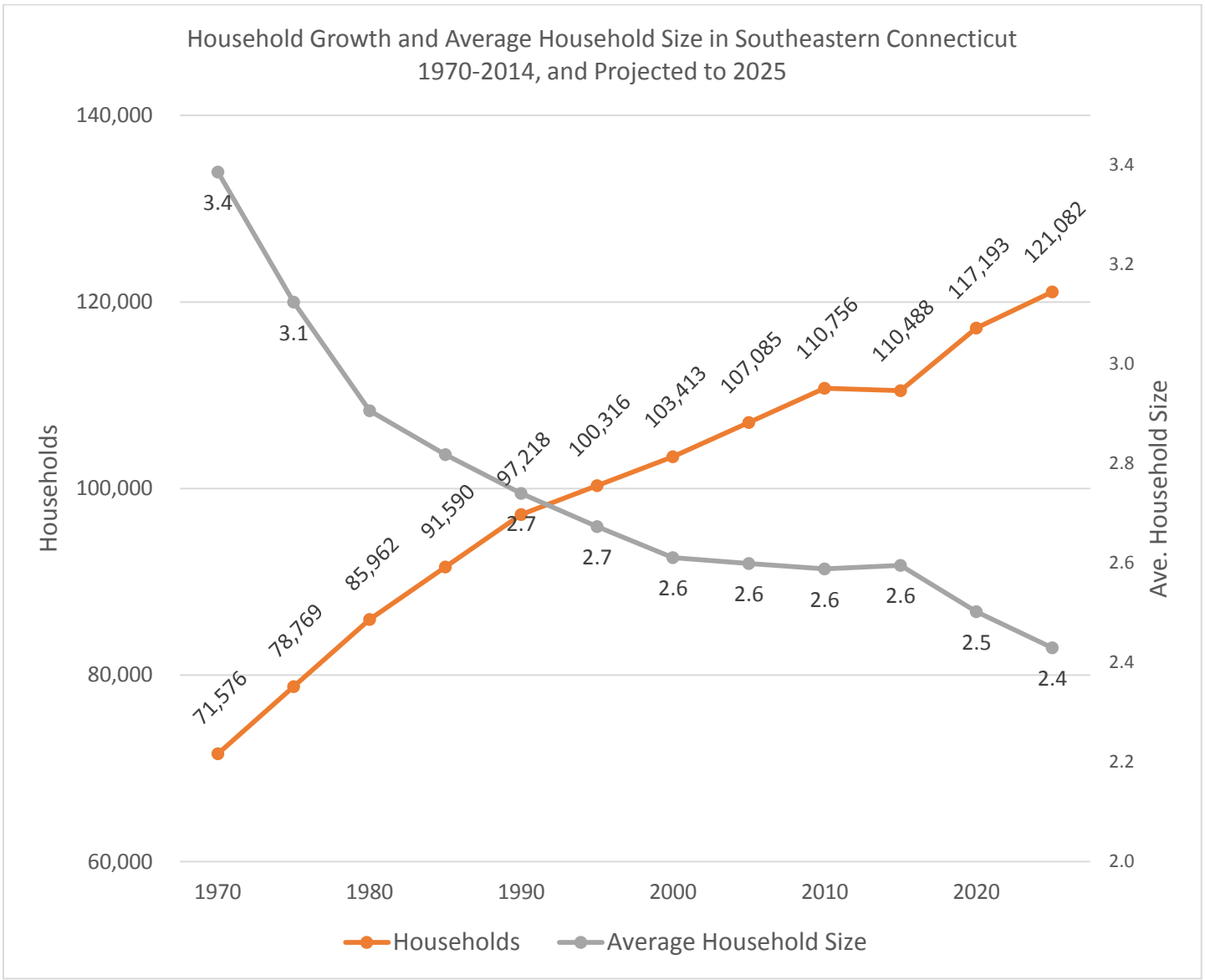


Figure 58. Change in the Number of Households and Average Household Size, 1970-2010, and Projected to 2025.
Mid-decade values from 1970 to 2010 are averages of decennial values.
Source: Decennial U.S. Census, Connecticut State Data Center.

Role of Seniors and Millennials in the Housing Market

The projected change in households shown in Figure 57 shows a shrinking of middle-aged households and a large expansion of households headed by young seniors (55-74) and the elderly (75+). By 2025, over 40% of the region's households will be headed by a senior citizen 65 years or older, up from 23% in 2010. Research in Connecticut and nationally suggests that despite the popular image of seniors retiring to warmer climates in southern states, many or most would prefer to remain in their family homes as they age. As Figure 59 demonstrates, the desire to move actually decreases as a person ages, with 16% of young people expecting to stay in their current home for at least ten years, but 55% of seniors expecting to stay in place.

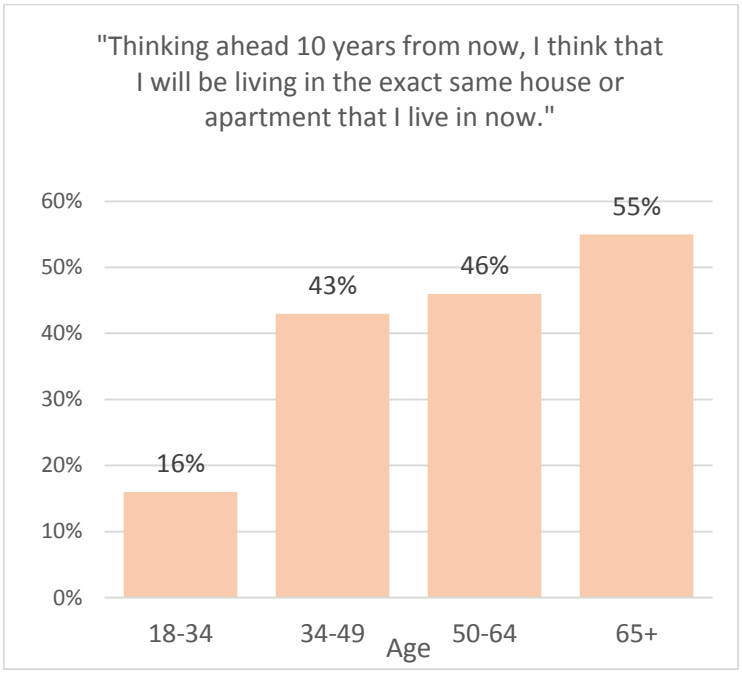


Figure 59. Likelihood of Remaining in Current Home for at Least Ten Years, *Greater New London Residents.
Source: DataHaven Community Wellbeing Survey.
*Greater New London in this data set includes East Lyme, Groton, Ledyard, Lyme, Montville, New London, North Stonington, Old Lyme, Stonington, and Waterford.

In southeastern Connecticut, the millennial generation, born between about 1980 and 2000, is the second largest after the baby boomers. Nationally, millennials are delaying marriage and childbearing and are more likely to prefer neighborhoods with urban amenities than car-dependent suburban neighborhoods. Student debt and high rental costs are major factors in delaying the purchase of a first home. As millennials begin to make permanent housing decisions, they may value cost, convenience, and neighborhood amenities more so than previous generations for whom space was a leading factor in housing decisions.

Active-Adult Home in Niantic.
Source: whitingfarmscommon.com

The housing decisions of millennials and senior residents will play a major role in the southeastern Connecticut housing market. If large numbers of seniors shift from their current single-family houses to smaller, easier-to-maintain homes, then existing housing will be available for millennials as they begin to form families. But if seniors choose to age-in-place, then demand for larger units for younger households will continue while older households will require additional in-home services and home renovations to enable them to age-in-place. Expanding options for low-maintenance housing close to employment, shops and services will help satisfy demand from both young households and older adults shifting out of larger housing.

Fiscal Conditions



New London Public Library Children's Room, Lisbon Central School Playground, Waterford Town Hall.
Source: Library Photo By John Phelan, Wikimedia Commons. Others by SCCOG staff.

Southeastern Connecticut's twenty-two cities, towns, and boroughs are tasked with supporting their residents and businesses with safe and adequate infrastructure, municipal services such as police and fire protection, and quality education for the region's children. The ability of municipalities to provide these services is linked to adequate funding generated by local property taxes, state and federal funding, and miscellaneous other sources. Fiscally-healthy municipalities can provide required services without over-burdening residents with taxes and fees. Municipalities with a mismatch between incoming revenues and service costs may raise taxes to unsustainable rates, find it difficult to borrow funds at low rates, and struggle to maintain adequate infrastructure and services. Indicators of fiscal health include bond ratings, tax rates, and overall debt levels.

Municipal Bond Ratings

One measure of municipal economic health is the bond rating, a grade given to a potential borrower (in this case, a municipal government), that describes their credit quality, or likelihood of repaying debts. Bond ratings are provided by independent rating services which each use a different grading system. Table 6 shows a composite score created for each town based on the various bond ratings available for each community, assigning a value of 3 to highest bond ratings and 1 to upper medium ratings and averaging available ratings for each community.

Municipal Bond Ratings				
Municipality	Moody's	Standard and Poor's	Fitch	Averaged Ranking (3=Highest, 1=Upper Medium)
Preston		AA+		2.5
Stonington	Aa1			2.5
Salem	Aa1			2.5
Groton (Town)	Aa2	AA+	AA	2.0
East Lyme	Aa2			2.0
Ledyard	Aa2			2.0
Norwich	Aa2	AA	AA	2.0
Sprague	Aa2			2.0
Waterford	Aa2	AA		2.0
Lebanon (2010)	Aa2			2.0
Windham	Aa3	AA		1.9
Griswold		AA	AA-	1.9
Groton (City)	Aa3	AA-		1.7
Colchester	Aa3			1.7
Lisbon	Aa3			1.7
Montville	Aa3			1.7
Bozrah (2013)	A1			1.3
New London		A+	A+	1.3
N. Stonington (2013)	A1			1.0
Franklin	A3			0.7

Table 6. Municipal Bond Ratings.
Ratings are from 2015 unless otherwise noted. Primary source: State of Connecticut Municipal Fiscal Indicators, January 2016. Averaged ranking score calculated by SCCOG staff.

PROPERTY TAXES

Local property taxes are the primary source of revenue to support municipal operations for most municipalities in Connecticut and within the region. The amount of taxable property within each town varies considerably. Table 7 shows the variation in available taxable property per capita in each municipality, from a high of $233,000 in Waterford to a low of $48,000 in Windham. Additional funding may come from state educational cost-sharing funds, state and federal transportion funding, federal funding such as Community Development Block Grants, or other sources. Generally, the amount of supplemental funding increases as taxable property per capita declines.

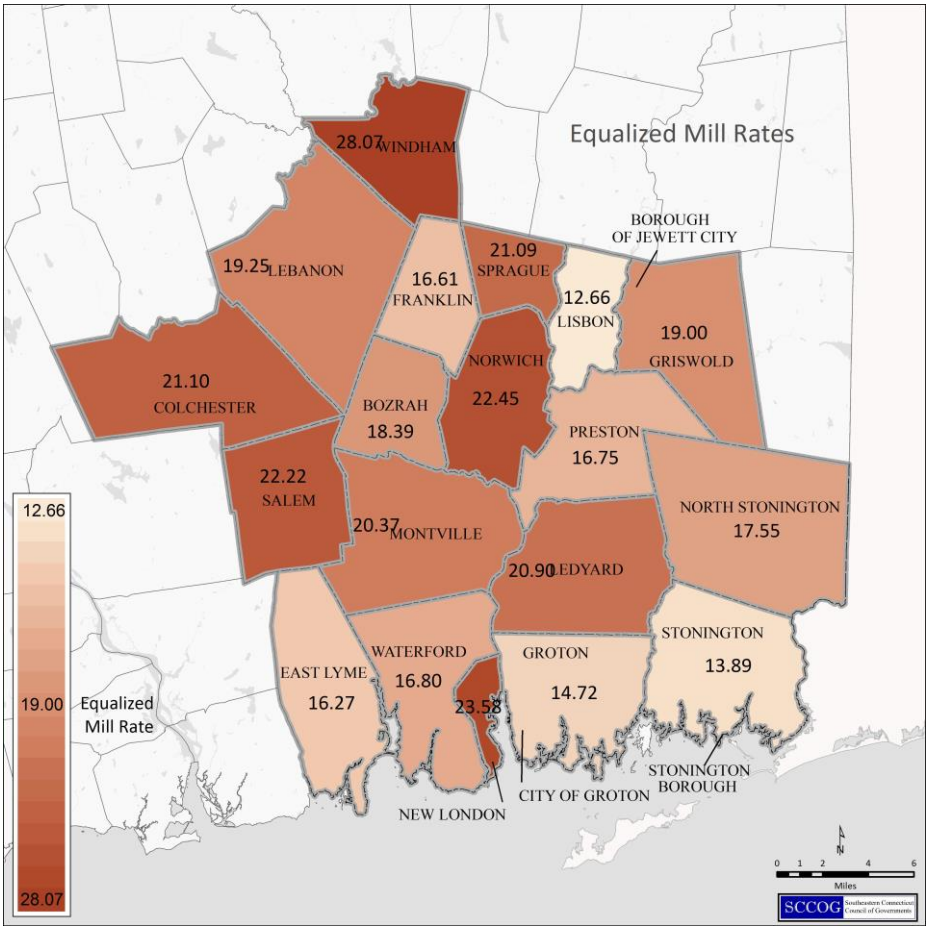
Reliance on property taxes as a revenue source incentivizes municipal governments to support development that adds taxable property to the grand list with minimal public service needs. The presence of commercial and industrial property can reduce the burden to single-family homeowners, as in Waterford, where commercial facilities such as the Crystal Mall and Millstone Power Station make the town's non-residential grand list the highest valued in the region, ahead of the larger and more urban municipalities of Groton, Norwich, and New London.

Municipality	Taxable Property Per Capita (Equalized Net Grand List/ Population)	Share of Revenues from Property Tax	Composition of Taxable Property		
			Residential (1-3 Family Homes)	Commercial Industrial Apartments	Other (Personal, Vacant, Etc.)
Windham	$ 47,652	45%	50%	26%	25%
New London	$ 67,139	50%	47%	10%	43%
Norwich	$ 73,093	54%	55%	23%	22%
Sprague	$ 78,716	51%	62%	10%	28%
Griswold	$ 80,429	52%	77%	7%	16%
Montville	$ 90,499	59%	67%	14%	20%
Ledyard	$ 97,930	58%	77%	6%	18%
Colchester	$ 105,805	63%	74%	10%	16%
Salem	$ 105,805	68%	79%	5%	16%
Preston	$ 114,903	56%	73%	7%	20%
Lebanon	$ 115,375	64%	76%	4%	20%
Bozrah	$ 117,579	69%	60%	14%	26%
Lisbon	$ 130,183	53%	58%	22%	21%
Groton	$ 135,773	62%	64%	28%	8%
Franklin	$ 140,462	71%	56%	19%	25%
N. Stonington	$ 144,783	63%	70%	10%	20%
East Lyme	$ 153,213	69%	81%	8%	11%
Stonington	$ 200,332	84%	73%	15%	12%
Waterford	$ 233,380	87%	43%	26%	31%
Regional Average	**$ 116,880**	**n/a**	**64%**	**17%**	**18%**

Table 7. Taxable Property, 2014.
Source: State of Connecticut Municipal Fiscal Indicators, January 2016.

Property Tax Rates

Property tax rates in Connecticut are expressed in mill rates, with a dollar value equal to the stated mill rate charged for every $1,000 of property (properties are usually assessed at 70% of appraised market value). "Equalized mill rates" are calculated by the State of Connecticut to allow comparison of town rates and control for the fact that property assessments are updated on a staggered schedule in Connecticut. The average equalized mill rate in Connecticut was 18.81 in 2014. In southeastern Connecticut, 2014 equalized mill rates ranged from a low of 12.66 in Lisbon to a high of 28.07 in Windham, meaning that a $150,000 home in Lisbon would cost $1,330 in annual property taxes while a similarly-valued home in Windham would cost $2,950 in taxes per year. High property tax rates drive down property values as tax rates becomes less attractive relative to neighboring communities. Unequal tax rates across the region have the effect of pushing investment to communities with lower tax rates and away from the urban centers of Windham and New London, which have the region's highest tax rates.



Municipality	Equalized Mill Rate
Windham	28.07
New London	23.58
Norwich	22.45
Salem	22.22
Colchester	21.10
Sprague	21.09
Ledyard	20.90
Montville	20.37
Lebanon	19.25
Griswold	19.00
Bozrah	18.39
No. Stonington	17.55
Waterford	16.80
Preston	16.75
Franklin	16.61
East Lyme	16.27
Groton	14.72
Stonington	13.89
Lisbon	12.66

Figure 60. Variation in Local Property Tax (Mill) Rates, 2014.
Source: State of Connecticut Municipal Fiscal Indicators, January 2016. Note that the actual property tax paid takes into account assessed value as well as various municipal exemption programs such as for low-income elderly or veterans.

Education Spending

At a time of generally declining enrollment, education spending per student has mostly increased. More than one third of the region's comunities saw per pupil spending increase by 20% or more over the last five years, with all but three communities (Preston, Groton, and Sprague) showing per pupil expenditure increases of at least 10% (Figure 61).

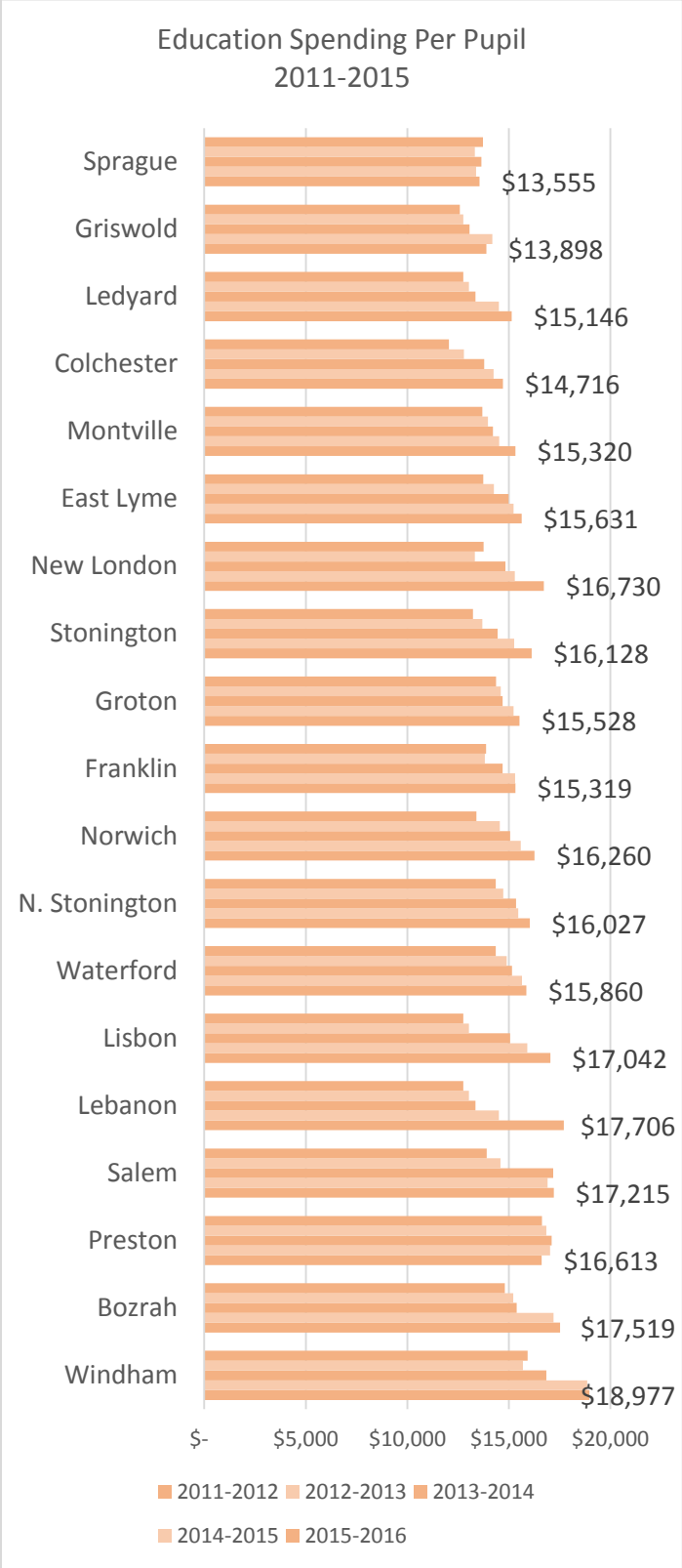


Figure 61. Education Expenditures per Pupil.
Source: State of Connecticut Department of Education Report-Net Current Expenditures per Pupil.

MUNICIPAL INDEBTEDNESS

Municipalities take on debt to finance investments in infrastructure that will be used over the long-term, such as when building a school or improving roads and utilities. Borrowing costs are linked to the town's ability to pay back the loan, as measured by municipal bond rating agencies. Towns with lower bond ratings (riskier) pay higher interest rates on their loans. One way to compare debt levels between towns is to calculate the municipal debt per resident of a town. In southeastern Connecticut, indebtedness per capita ranges from as low as $102 in North Stonington to more than $4,000 per person in Waterford (Table 8). Towns with higher grand lists are able to sustain higher levels of debt without debt payments stressing revenues. The statewide average municipal debt per capita was $2,325 in 2014, with only four municipalities in southeastern Connecticut exceeding that amount.

Municipal Debt 2014	Per Capita	As % of Equalized Grand List
Waterford	$ 4,884	2.1%
Sprague	$ 2,770	3.5%
East Lyme	$ 2,759	1.8%
Stonington	$ 2,367	1.2%
Montville	$ 2,070	2.3%
New London	$ 1,836	2.7%
Griswold	$ 1,490	1.9%
Groton	$ 1,476	1.1%
Salem	$ 1,410	1.2%
Bozrah	$ 1,390	1.2%
Preston	$ 1,342	1.2%
Norwich	$ 1,044	1.4%
Ledyard	$ 1,030	1.1%
Colchester	$ 1,005	1.0%
Franklin	$ 910	0.6%
Lisbon	$ 886	0.7%
Windham	$ 886	1.9%
Lebanon	$ 431	0.4%
No. Stonington	$ 171	0.1%

Table 8. Municipal Indebtedness per Capita, 2014.
Source: State of Connecticut Municipal Fiscal Indicators, January 2016.

Transportation & Mobility

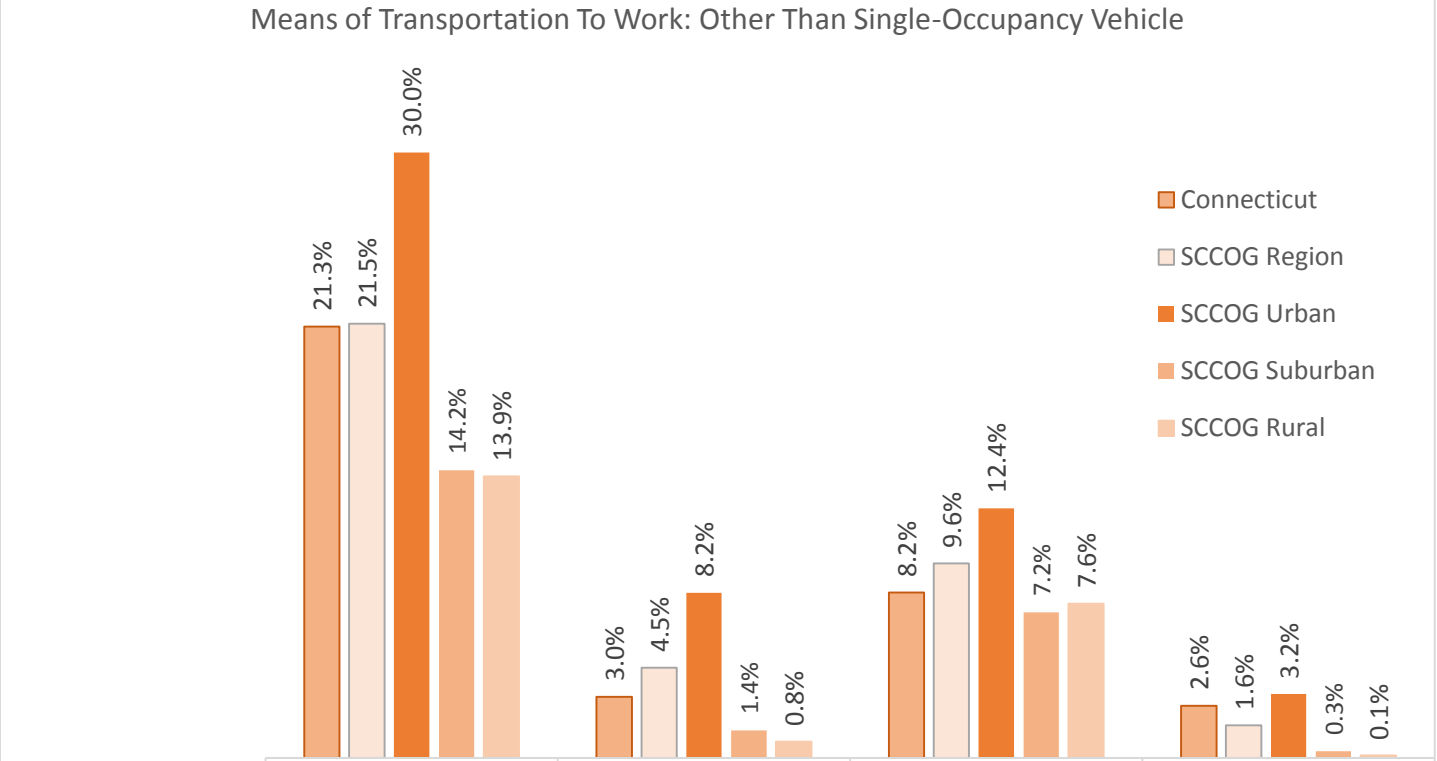
Intermodal Transportation in 1876 Norwich: Sailboats, Steamships, and Rail.
Source: CT MAGIC Image Archive.

Southeastern Connecticut's communities were originally founded when over-land travel was difficult and goods were most efficiently shipped by boat. New London and Norwich became major port cities. By the early twentieth century, railroads and trolleys had supported industrial growth and the region's first suburban neighborhoods. The region's phase of fastest development occurred after World War II, when demand fueled the growth of auto-oriented suburbs and shopping centers located at highway interchanges. This pattern of development has left the region with valuable transportation amenities but a dispersed pattern of homes and commercial areas.

Decisions about how and where to make changes to the current transportation network occur at many levels—by the private developer or owner funding work within a site or development, by town engineering staff working to maintain roads and improve safety, by local elected officials deciding where to prioritize spending, by state elected officials and their staff investing in and overseeing work done on both state and local roadways, and by the federal government, through the pass-through of federal dollars to the state and to local governments and the local compliance actions the funds require. Likewise, the maintenance and operation of the region's roads and transit system requires the cooperation of multiple entities. SCCOG is responsible for preparing Long Range Transportation Plans for the region, with the most recent plan completed in 2015. In 2016, SCCOG entered into a Memorandum of Understanding/Cooperative Agreement with the Rhode Island State Planning Council, the designated Metropolitan Planning Organization for the entire State of Rhode Island, in support of intra-regional cooperation.

Travel Behavior

In Southeastern Connecticut, 79% of workers drive to work in single-occupancy vehicles, about the same share as workers statewide. As Figure 62 show, urban residents are far more likely to choose other types of transportation for getting to work, with 30% of urban residents either carpooling, taking transit, or travelling by some other means, including 8% who walk to work (urban communities include New London, Norwich, Windham, and Groton). Information about how residents travel for non-work purposes is not available at a local level.



	Total Other than Drove Alone	Walked	Carpooled	Bus
Connecticut	21%	3%	8%	3%
SCCOG Region	21%	4%	10%	2%
SCCOG Urban	30%	8%	12%	3%
SCCOG Suburban	14%	1%	7%	0%
SCCOG Rural	14%	1%	8%	0%

Chart does not show work-at-home (4-5% of total) and other modes including rail, bicycle, and ferry totalling less than 1%

Figure 62. Means of Commuting.
Source: 2014 Five-Year American Community Survey.

Factors Affecting Travel Behavior

Locations of Jobs Held by Southeastern Connecticut Residents

Decisions about how to travel are based on multiple factors that include the availability and quality of public transit at both ends of the trip. Employees travelling to transit-served work locations will not use transit if they are coming from transit-poor residential areas. Large employers in Groton, Norwich, New London, and Montville make these towns the top four employment destinations for the region's working residents, employing 37% of the region's workers. About 60% of the region works in one of the ten top workplace locations, which include Hartford, the state's largest employment center. About 40% of residents work in smaller towns or more distant locations. The diversity of work-related travel makes providing mass transit options difficult.

Locations of Major Destinations

Destinations which attract heavy amounts of vehicle traffic are present throughout the region (Figure 63). While most of these high-traffic sites are currently served by local bus routes, many of the busiest sites are in lightly developed areas away from centers of population where access by transit, walking, or biking is difficult if not impossible.

Top 30 Job Destinations for Southeastern Connecticut Residents

Location	Jobs	%
Groton	17,133	13%
Norwich	10,888	9%
New London	9,829	8%
Montville	9,340	7%
Waterford	6,713	5%
Ledyard	6,524	5%
Stonington	4,476	4%
Windham	3,751	3%
Hartford	3,484	3%
East Lyme	3,326	3%
Colchester	1,992	2%
Mansfield	1,726	1%
Westerly	1,514	1%
Manchester	1,288	1%
Old Saybrook	1,225	1%
New Haven	1,214	1%
Middletown	1,148	1%
East Hartford	1,108	1%
Old Lyme	1,095	1%
North Stonington	1,030	1%
Farmington	947	1%
Lebanon	932	1%
Plainfield	931	1%
Glastonbury	914	1%
Killingly	862	1%
Griswold	787	1%
Lisbon	781	1%
Bozrah	726	1%
Newington	689	1%
Meriden	631	0.5%
All Other Locations	30,606	24.0%

Table 9. Locations of Jobs Held by Southeastern Connecticut Residents.
Source: U.S. Census Bureau Longitudinal Employer-Household Dynamics, 2014.

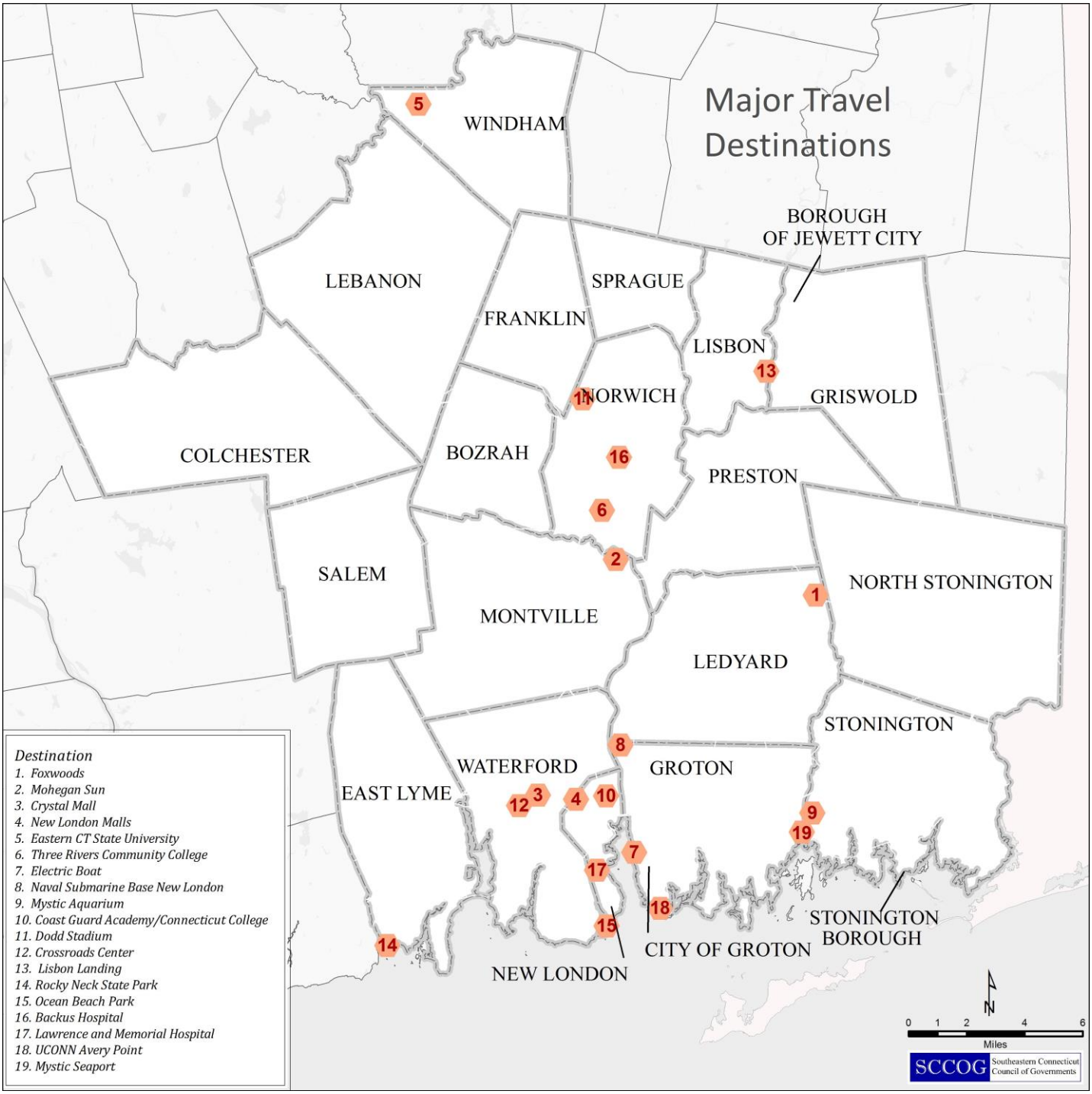


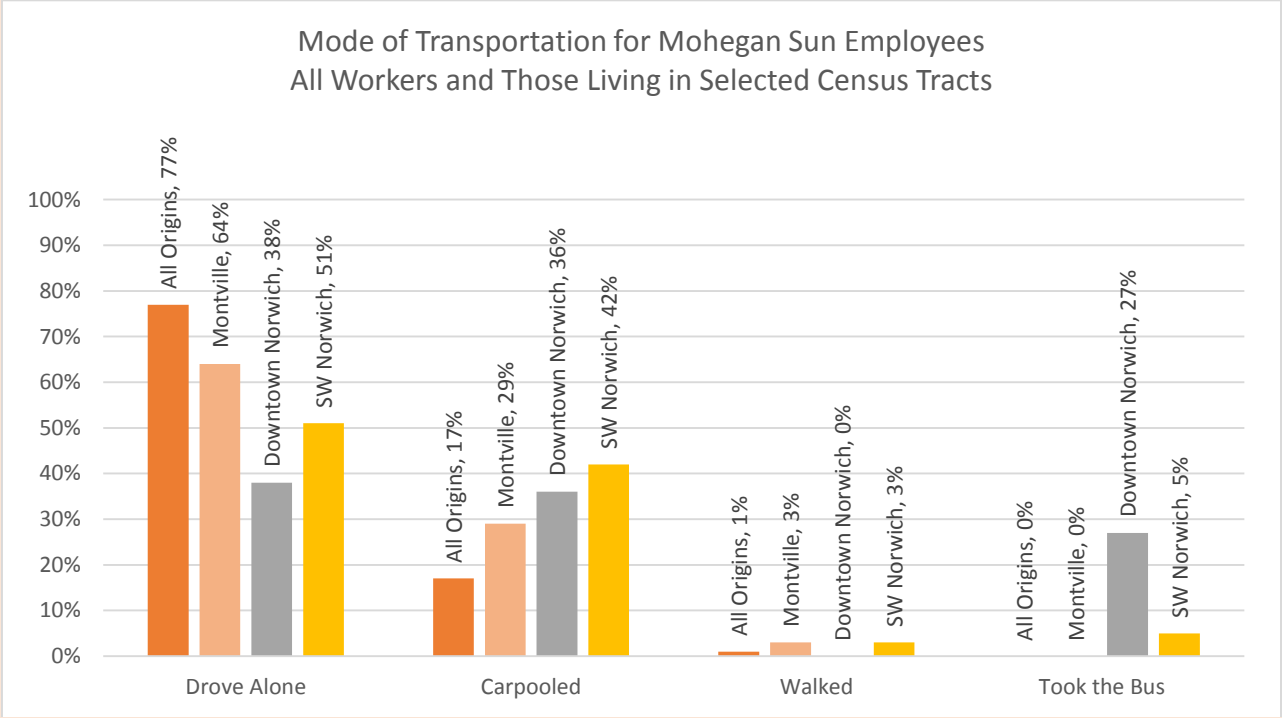
Figure 63. Major Travel Destinations.
Source: State of Connecticut Department of Transportation.

Travel Profile: How different home locations affect commuting choices

The location of home relative to work plays a big role in determining how people can travel. As one example, census tract 8705.01 in Montville is home to Mohegan Sun, one of the region's largest employers. Over 9,000 people reported working within this census tract in the last available travel census data set from 2010. Of these workers, 77% reported that they drove alone. Only 4% of workers used a bus, and only 1% walked to work.

Travel behavior shifts as you look at specific home locations of employees. Residents of downtown Norwich who work at Mohegan Sun are far more likely to take a bus to work, or carpool, than workers who live elsewhere. Workers who live near the casino in Montville or southwestern Norwich are slightly more likely to walk to work than others (3% of workers in both census tracts walk).

At another major employer, Lawrence & Memorial Hospital in New London, 86% of workers drove alone, about 2% walked to work, and no one working in the census sample reported taking the bus, despite the hospital being located on a bus route.



TRANSPORTATION INFRASTRUCTURE

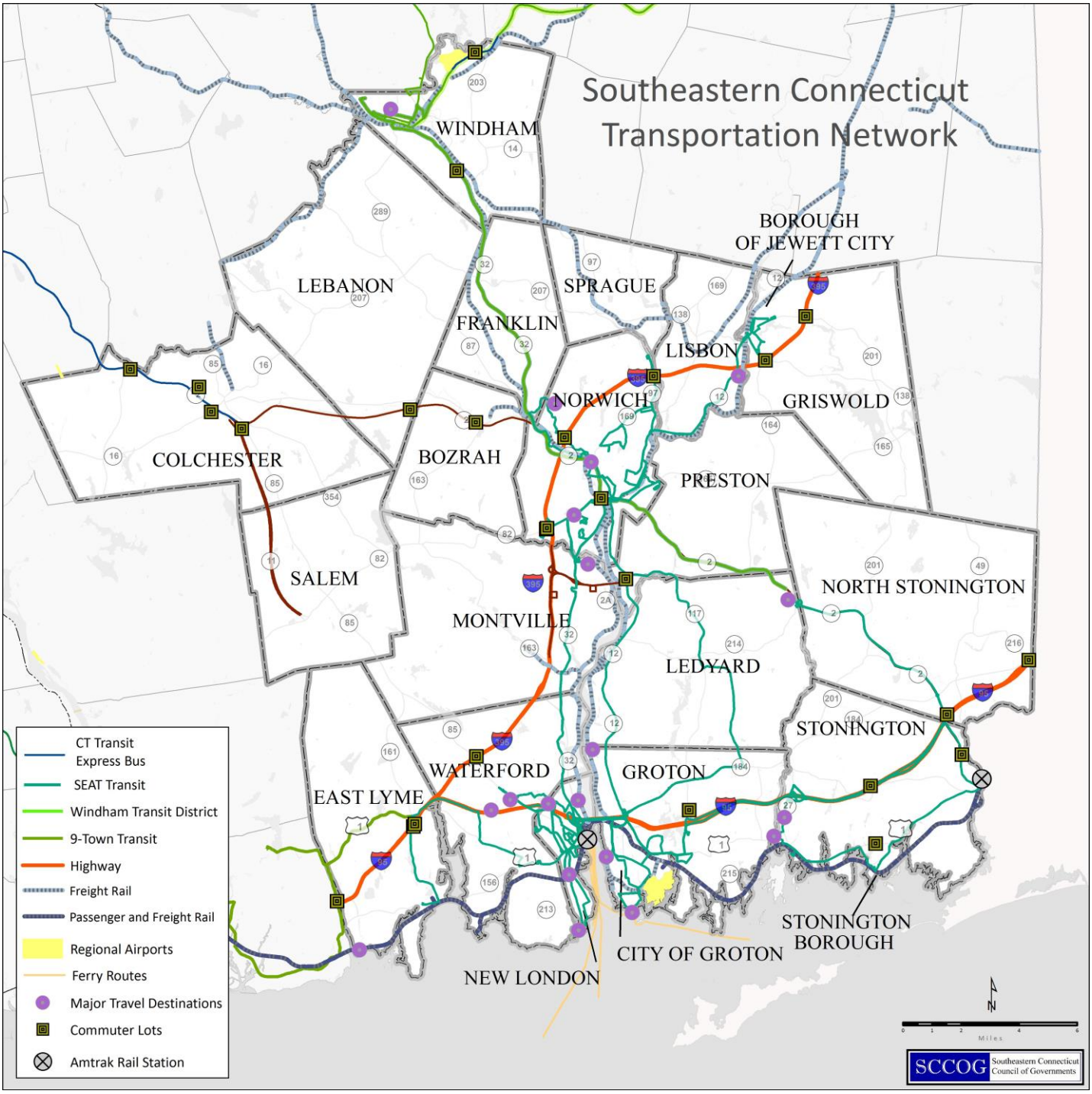


Figure 65. Southeastern Connecticut Transportation Network.
Source: SCCOG, SEAT Transit, Windham Transit, Estuary Transit.

Highways and Streets

The southeastern Connecticut region contains over 2,000 miles of local and state-owned roads, with 27% of roads in urban areas, 51% in suburbs, and 22% in rural areas. Local municipalities own and maintain the vast majority of roads, at 76% of the total (Figure 66). Rural and suburban municipalities contain more roads than do urban areas, relative to their population. While region-wide, there are just over seven miles of road per 1,000 residents, the number is twice that in rural areas. Urban areas have just 4 miles of road for every 1,000 residents.

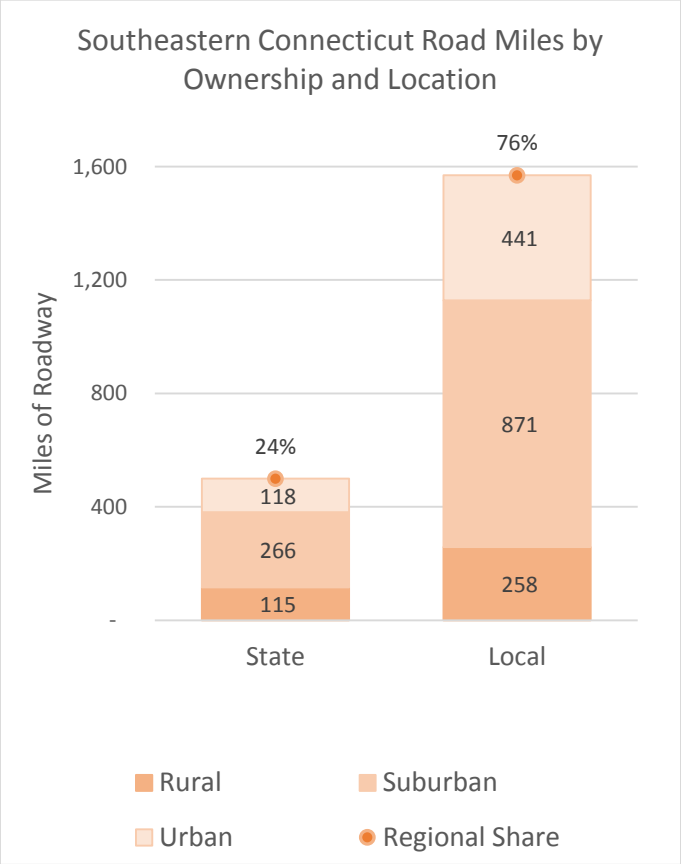


Figure 66. Ownership and Maintenance of the Region's Roads.
Source: Connecticut Department of Transportation.

While in general, traffic in the region has increased in the past few decades, growth is uneven. Table 10 shows change in traffic volume along southeastern Connecticut's major roads. While the volume of traffic on I-95, Route 2 and I-395 has increased more than 20% in many places over a 20-year period, and as high as 60% in Norwich, usage along other portions of roadways has grown more slowly or even declined. Congestion is found throughout the region (Figure 67). Congestion on Interstate 95 in Groton can increase by 60% in summer months.

Change in Average Daily Traffic at Selected Points			
Roadway	**Town**	**Road Segment**	**% Change in Traffic Volume 1992-2014**
Route 2	Colchester	EB FR RTE 149 TO MILL HILL RD.	59%
	Colchester	EB FR RTE 354 TO CHESTNUT HILL RD.	97%
	Lebanon	COLCHESTER TL TO SCOTT HILL RD.	92%
	Bozrah	EB FR RTE 163 TO EB TO RTE 608	79%
	Norwich	EB JCT RTE 2A EB EXIT I-395	36%
	Norwich	LAFAYETTE ST. TO BROADWAY	-14%
	Preston	SCHOOL HOUSE RD. TO RTE 117	-19%
	Preston	MATTERN RD.TO RTE 164	3%
	Ledyard	RTE 164 TO WATSON RD.	17%
	North Stonington	SWANTOWN HILL RD. TO RTE 201	1%
	North Stonington	ROCKY HOLLOW RD TO RTE 184	1%
	North Stonington	RTE 184 TO RTE I-95	6%
	Stonington	ROUTE 49 TO WHITEROCK RD.	16%
Route 32	Waterford	SCOTCH CAP RD. TO RTE 693	-10%
	Montville	PETER-PAUL SHOP CTR TO RTE 163	-10%
	Montville	RTE 163 TO SERGIOS SHOPPING CENTER	7%
	Norwich	DUNHAM ST TO RTE 82	3%
	Franklin	FRANKLIN TL TO RTE 87	28%
	Franklin	MURPHY RD TO RTE 610	38%
	Franklin	WHIPPOORWILL HOLLOW RD TO RTE 207	18%
	Lebanon	LEBANON-WINDHAM TL	3%
	Windham	INTERSECTION OF RTE. 203	4%
	Windham	AT FROG BRIDGE	-8%
	Windham	ROANOKE TO RTE 6 EB	6%
Interstate 95	East Lyme	SOCIETY RD TO RTE 161	31%
	Waterford	NB FR PKWAY S TO NB EXIT TO PKWAY S	11%
	Groton	NEW LONDON TL TO RTE1	1%
	Groton	RTE 349 TO RTE 117	9%
	Stonington	RTE 654 TO RTE 234	13%
	Stonington	TAUGWANK RD TO RTE 2	15%
	North Stonington	RTE 49 TO RTE 216	40%
Interstate 395	Waterford	EAST LYME-WATERFORD TL TO RTE 85	160%
	Waterford	RTE 85 TO WATERFORD-MONTVILLE TL	116%
	Montville	RTE 163 TO RTE 2A	50%
	Montville	RTE 2A TO MONTVILLE-NORWICH TL	69%
	Norwich	RTE 82 TO RTE 2	62%
	Norwich	RTE 642 TO RTE 97	85%
	Griswold	RTE 138 TO RTE 201	56%

Table 10. Change in Average Daily Traffic at Selected Points, 1992-2014.
Source: Connecticut Department of Transportation

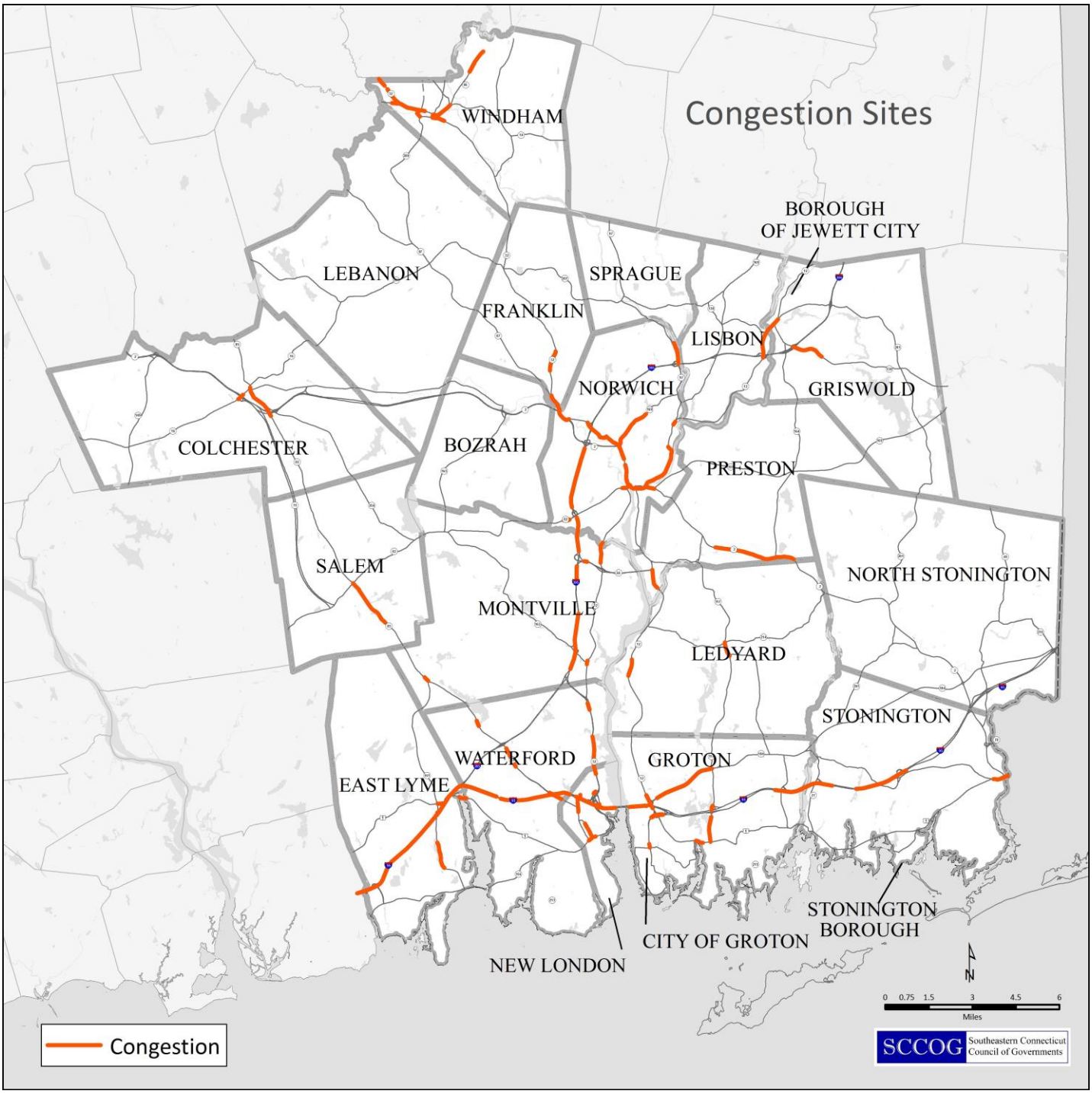


Figure 67. Congestion Sites in Southeastern Connecticut.
Source: CT DOT Congestion Screening and Monitoring Report, SCCOG 2015-2040 Regional Long Range Transportation Plan.

Access to Private Vehicles

Census survey data indicates that nearly all residents of suburban and rural towns have access to a vehicle, but thousands of residents in the region's four urban areas do not.

Overall, about 7% of the region's households lack access to a private vehicle—between 7,000 and 10,000 households (Figure 68). The proportion is much higher in New London, Windham, and Norwich, where between 11% and 23% of households do not have access to a vehicle. Adult residents are much more likely to lack transportation to school, work, or services if they are young, non-white, or low-income (Figure 69).

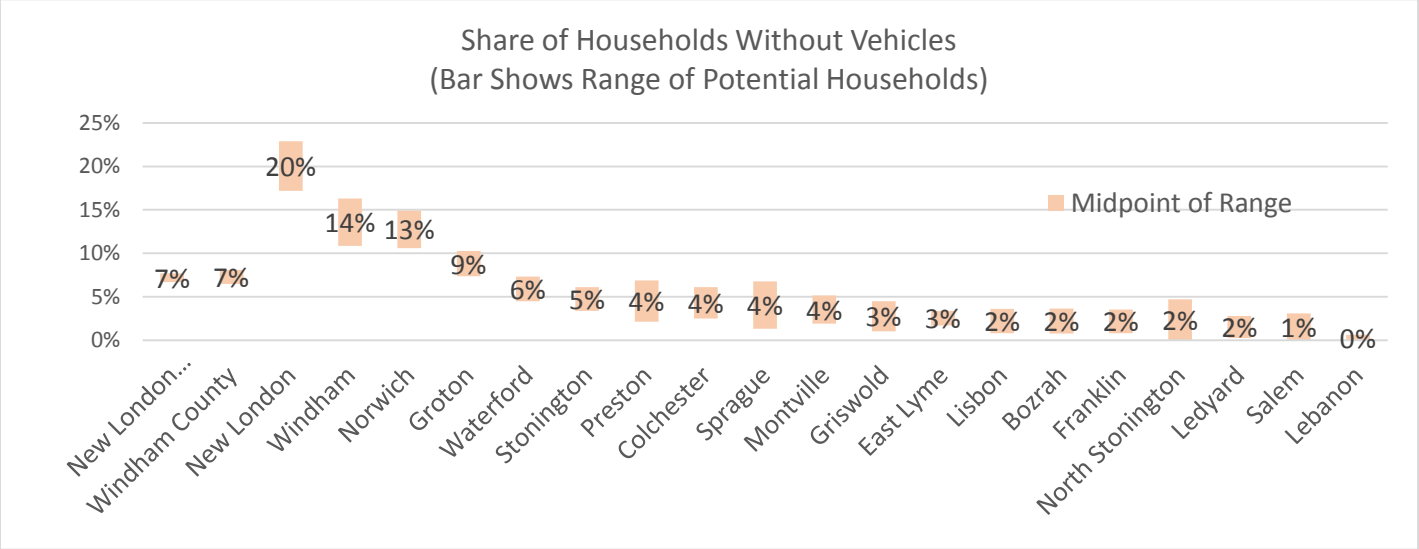


Figure 68. Share of Households without Vehicles. Source: 2014 Five-Year American Community Survey.
Because the margins of error for this statistic are quite large, the chart displays the range of potential actual values.

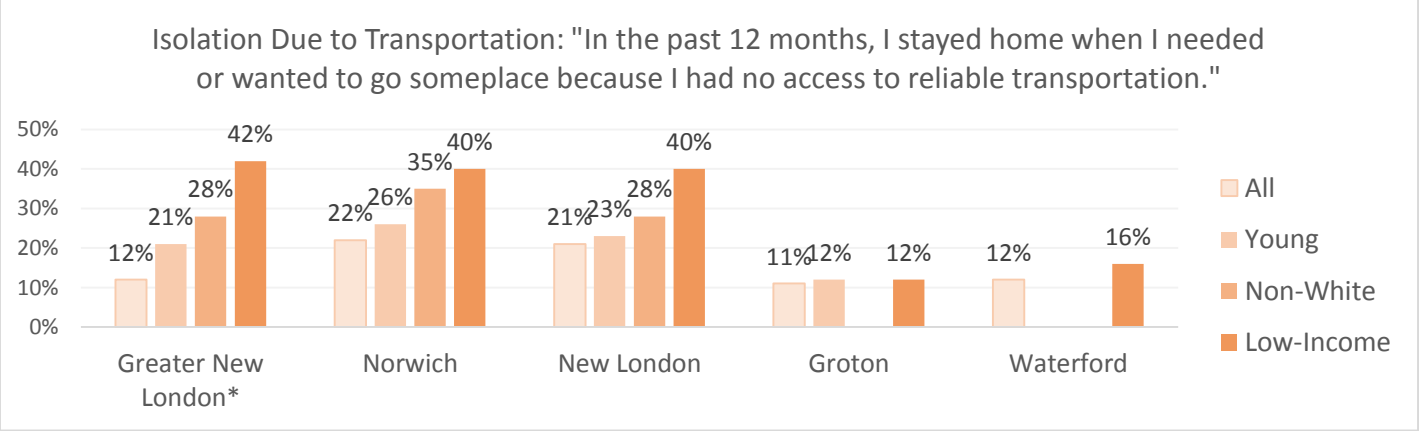


Figure 69. Isolation Due to Lack of Transportation.
Source: 2015 DataHaven Community Wellbeing Survey. *Greater New London in this data set includes East Lyme, Groton, Ledyard, Lyme, Montville, New London, North Stonington, Old Lyme, Stonington, and Waterford. Missing values are not available.

Commuter Parking Lots

Commuter lots can enable transportation options to low-density areas by facilitating access to transit and carpooling. Commuter lots owned and maintained by the State of Connecticut are distributed throughout southeastern Connecticut, usually near highway entrances, as illustrated in the transportation network map in Figure 65. Figure 70 shows that many of the region's lots are currently under-utilized and have the capacity to support an expansion of carpooling or express bus ridership.

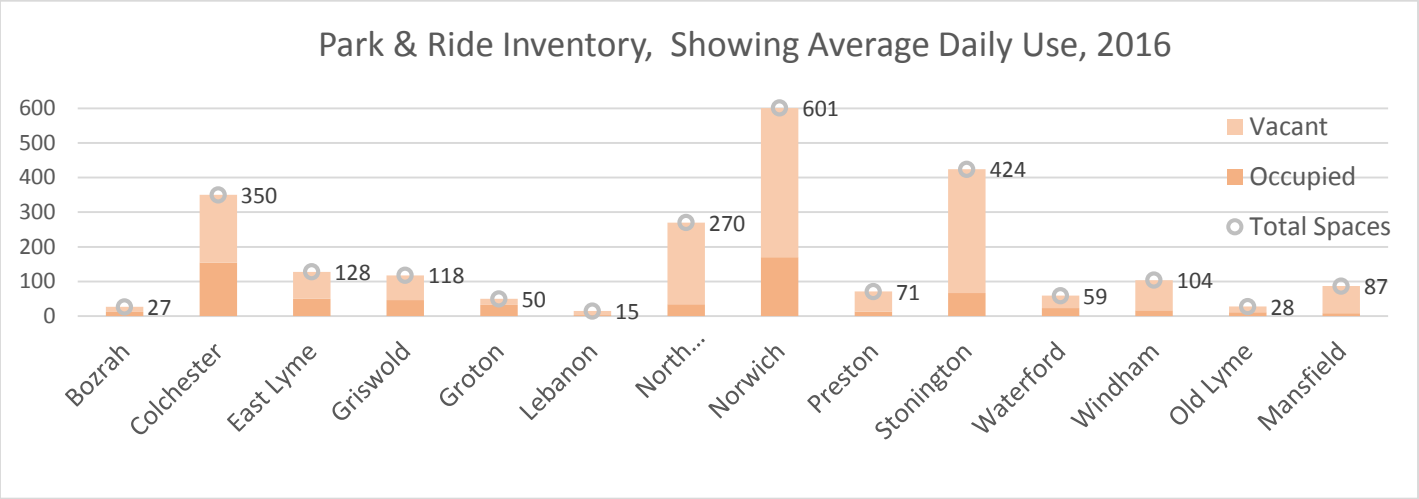


Figure 70. Commuter Park & Ride Lots Serving Southeastern Connecticut.
Source: SCCOG staff. Occupancy Counts recorded quarterly.

Taxi Services

According to a recent survey by the Eastern Connecticut Transportation Consortium, 11 taxi companies operate in southeastern Connecticut. A 2010 survey of Amtrak riders using New London Union Station indicated that 16% of weekday Amtrak riders used taxis to travel to or from the station (Regional Intermodal Transportation Center Master Plan and Efficiency Study, March 2010).

Emerging Car Services

Technological innovations have enabled the development of transportation services that provide additional access to cars and or/drivers on-demand. Zipcar is a car rental service that emphasizes convenience, with pick-up locations in three locations in New London allowing hourly or daily car use. Uber launched in Connecticut in 2014 and operates similarly to an on-call taxi service, but riders have the ability to closely monitor wait times and rate their riding experiences. Uber drivers drive their own cars and are employed as independent contractors. Mohegan Sun has designated three pick-up drop-off locations for Uber passengers and also offers first-time user discounts to encourage guests to use the service. According to Uber, use of the service quadrupled across Connecticut from February 2015 to February 2016, and the number of trips to New London Union Station increased 11 times within the same period ("Uber and Public Transit: Working Hand in Hand in Connecticut," Uber Blog, April 2016).

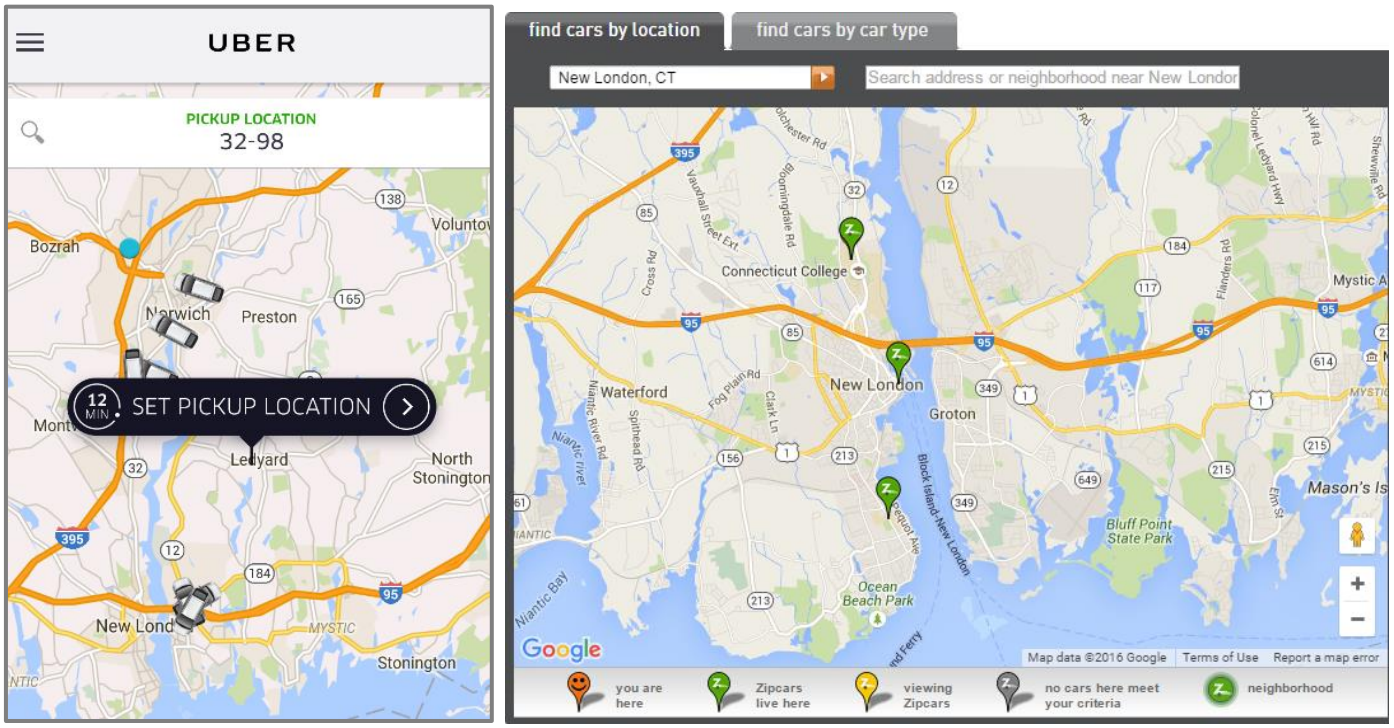


Figure 71. Emerging Car Services.
Uber and Zipcar are two newer transportation services active in southeastern Connecticut. Both allow for the "sharing" of vehicles through short-term vehicle rentals or on-call drivers. Sources: Uber app, Zipcar.com.

Local Bus Service

Four transit agencies provide service within the SCCOG region: CT Transit, which runs express bus service to Colchester from Hartford; 9-Town Transit, which runs a route between Old Saybrook, East Lyme, and New London; Windham Region Transit District (WRTD); and Southeastern Area Transit (SEAT), which operates through much of the region. As of October 2015, SEAT operated 17 regular bus routes within the region, providing 4,000 trips to passengers each weekday. The number of annual riders has increased by more than 25% over the last ten years (Figure 72). The two routes with the highest regular ridership, routes 7 and 12, both serve Mohegan Sun. As shown in the map in Figure 65, the majority of the region's major destinations for travel are served by some frequency of bus service. Buses in southeastern Connecticut generally run infrequently (every one to two hours). Windham Regional Transit District provides two local and two express routes in its service area. Ridership on WRTD buses in fiscal year 2014 was 252,343 annual passenger trips (Existing Conditions: Connecticut Statewide Bus Study). RIPTA operates both local and express bus service to Westerly, RI, with stops just across the border from Stonington's Pawcatuck village.

In 2015, the Southeastern Connecticut Council of Governments undertook an analysis of SEAT bus service. Figure 73 is excerpted from that analysis, showing current bus service levels compared to a composite transit index illustrating where transit is most needed

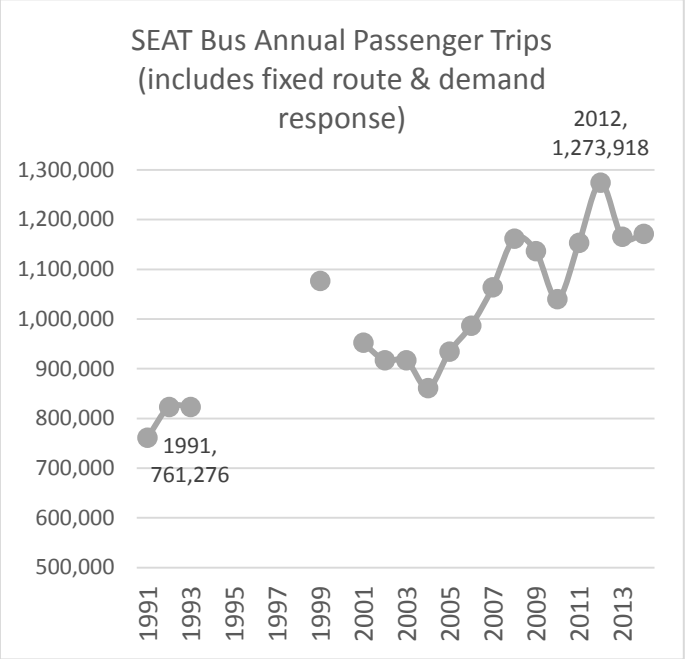


Figure 72. Annual Unlinked (One-way) Passenger Trips. Source: Federal Transit Administration National Transit Database. Data not available for missing values.

and can run most efficiently. The transit index identifies areas with high transit demand as those with high population and employment densities, areas populated by older individuals, individuals with low incomes or disabilities; households without access to automobiles; and overall regional travel flows.

The study proposed two cost-neutral service improvement packages as well as a plan for system expansion (Table 11). Both cost-neutral plans improve

Summary of Plan Alternatives from SEAT Bus Study							
Plan	Ridership	Hours of Service	Operating Cost	Capital Cost	Benefits		
A	16%	0%	0	0	More reliable service	More and better service to minority and low-income riders	Stronger regional connections: improve frequency of service to New London, Mohegan Sun, Three Rivers Community College, and Groton Sub Base
B	13%	0%	0	0			Stronger regional connections: Continue to provide regional service to Pawcatuck and Niantic
C	28%	26%	26%	$3.1 million			Improvements above as well as new service to Foxwoods, Groton Sub Base, and a seasonal Mystic Village shuttle

Table 11. SEAT Bus Study Improvement Plans.

service and ridership through route and alignment changes, while the third plan also increases the span and frequency of available routes to enhance the attractiveness and availability of transit. In 2016, the SEAT Board voted to endorse Plan B, which can be implemented with current fiscal resources.

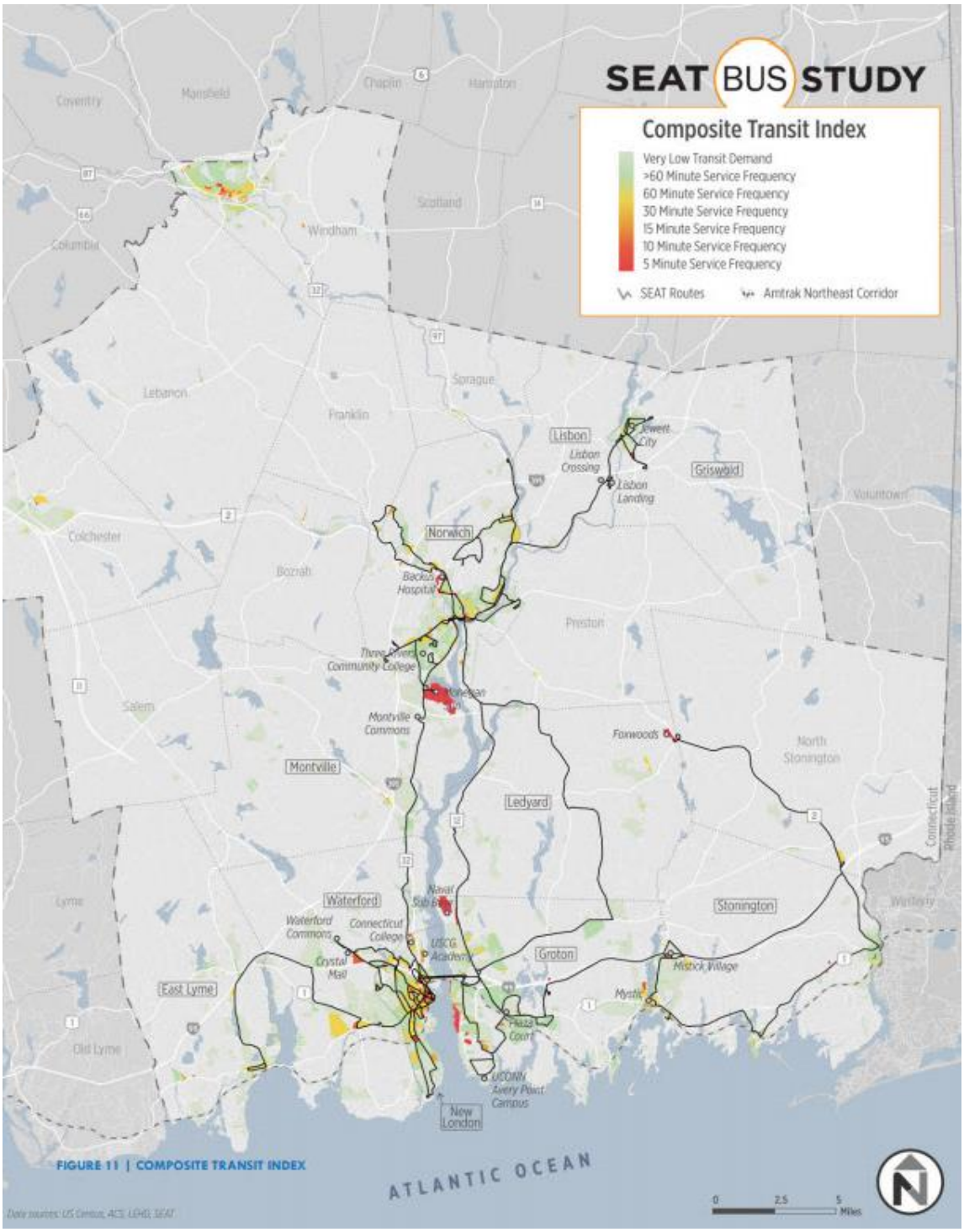


Figure 73. Potential Transit Demand Relative to Existing Service.
Source: 2015 SEAT Bus Study

Passenger Rail and Long-Distance Bus Service

Passenger rail service is available in New London (Amtrak and Shoreline East), Mystic (Amtrak), just over the Rhode Island border in Westerly (Amtrak), and just west of the region's border in Old Saybrook (Amtrak and Shoreline East).

As of April 2016, New London Union Station is served by six eastbound and seven westbound commuter rail trains each weekday. Shoreline East multi-ride ticket holders may also ride seven Amtrak trains each weekday for no additional charge. Rail traffic to New London is limited by capacity on the Niantic River Rail Bridge, which must open and close multiple times per day to permit boat crossings. More commuter rail trains serve Old Saybrook, west of the River. There, rail service is more than double that in New London, at a combined 34 Shoreline East trains each weekday.

Intercity buses stop at New London's Union Station, connecting to Boston and New York City. Multiple private bus operators also serve long-distance travelers to Foxwoods and Mohegan Sun. In January 2016 Mohegan Sun began allowing "reverse" travel on their Asian Line routes to New York City.

Air

Both Groton-New London Airport (KGON) and Windham Airport (KIJD) are both publicly-owned general aviation airports with two runways. Groton-New London is the larger of the two, primarily serving corporate shuttles, military, recreational, and student flights. Windham Airport is popular with recreational travelers and businesses who require fast and reliable transportation.

Rail Freight

Freight rail routes in southeastern Connecticut connect New London, Norwich, and Windham to coastal rail services and to Hartford, Providence, and Worcester. The rail lines to Providence and Worcester are both owned by the private freight company Genesee & Wyoming, which purchased the Worcester route in 2016. The region's freight rail services benefit from the rail connection at New London's State Pier, where tracks connect to one of the two piers and to warehouses.

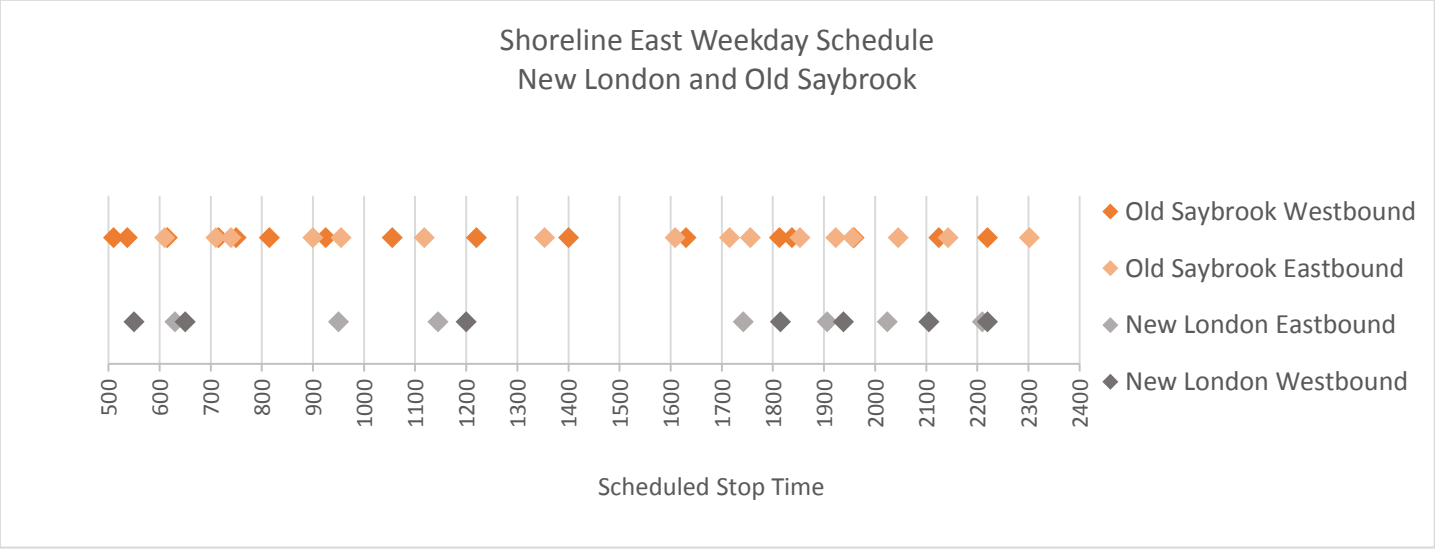


Figure 74. Scheduled Weekday Shoreline East Stops at New London and Old Saybrook.
Source: Shoreline East April 4, 2016 Timetable.

Water Transportation

Maritime Freight

The State Pier facility in New London includes a 1,000-foot pier with water depths of 30-35 feet and supporting warehouses and other structures. The pier has good access to Interstate 95 as well as a direct rail connection to the regional freight rail network. Figure 75 illustrates freight activity at the pier over a ten-year period, as metal products replaced forest products as the primary shipping commodity.

Ferry Service

Passenger and automobile ferry service is available in downtown New London to Block Island, Fishers Island, Orient Point and Montauk (Figure 76). The ferry terminal is convenient to local and intercity bus and rail service as well as municipal parking facilities. In 2013, Cross Sound Ferry transported over 1.1 million passengers and 430,000 vehicles between New London and Orient Point, and another 100,000 passengers between New London and Block Island.[9]

Water Taxi

The Thames River Heritage Park Foundation began operating a seasonal water taxi service in July 2016, linking the downtown New London waterfront, Fort Trumbull in New London, and Fort Griswold in Groton.

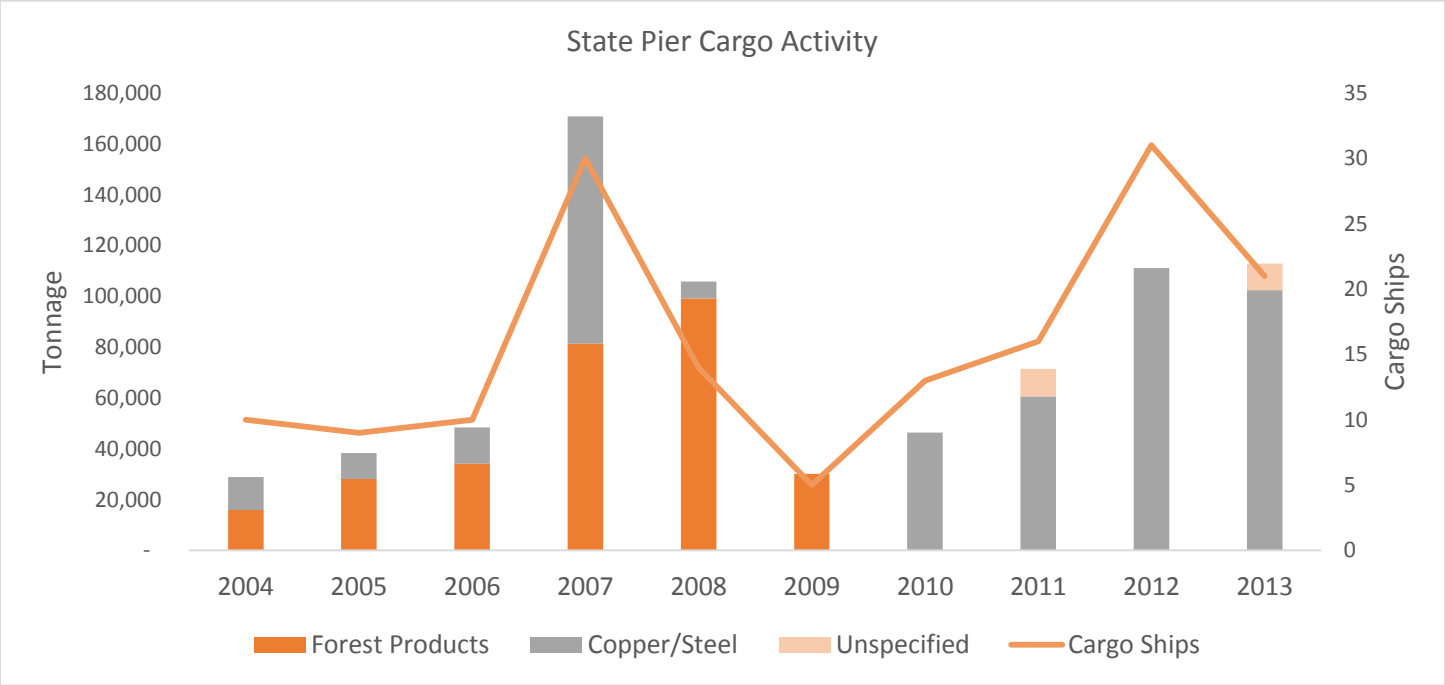


Figure 75. Cargo Activity at New London State Pier.
Source: 2015-2040 Long Range Transportation Plan.

[9] 2014 Testimony by Cross Sound Ferry Director of Public Affairs Stanley Mickus to Connecticut General Assembly.

Figure 76. Downtown New London Ferry & Intermodal Connections.
Source: SCCOG.

Bicycle & Pedestrian Travel

U.S. Census travel-to-work data shows that southeastern Connecticut residents bike and walk to work in similar rates as seen statewide, with a slightly higher share of residents walking than statewide (4.5% of workers, vs. 3.0% for the state (Table 12) While urban residents rely on walking in high numbers (8% of workers), the share of workers bicycling is very low, even in urban areas. Other cities elsewhere in Connecticut report higher shares of workers biking. New Haven has the highest share of biking, with 4% of commuters cycling, and Hartford and New Britain are close behind at 3%. The Census's commuting statistics do not report the potential extent of non-motorized travel in the region because cyclists often bicycle for recreation, exercise, or for other non-work trips.

Southeastern Connecticut currently has very few dedicated facilities for cyclists, but many state and local roads are suitable for cycling alongside vehicular traffic.[10] The greater challenge is in connecting continuous, safe inter-town routes between destinations. A database of user-submitted bicycling activity, known as Strava, illustrates the popularity of recreational biking within the region's urban centers (Groton, New London, Norwich and Willimantic), the shoreline, the Mystic River, state parks and forests (Pachaug, Bluff Point and Nehantic) and the proposed Tri-Town Trail corridor (Figure 77).

Strava data supports the conclusion that cycling is a popular recreational activity in areas that draw tourists. Several national studies document the potential economic impact of cycling on local economies through services, hotel, restaurant and construction jobs and sales taxes.[11] Improving on-road and off-road conditions for cyclists should be considered as an economic development strategy.

Biking and Walking as Means of Travel to Work			
		Walk to Work	Bike to Work
Connecticut		3.0%	0.3%
Southeastern Connecticut	Region	4.5%	0.2%
	Urban	8.2%	0.3%
	Suburban	1.4%	0.2%
	Rural	0.8%	0.0%

Table 12. Mode Share of Biking and Walking for Commuting Purposes.
Source: U.S. Census 2014 Five Year American Community Survey.

[10] Officially-designated bikeways include Montauk Avenue in New London; the G&S trolley trail in Groton, the Air Line Trail passing through Windham, Lebanon, and Colchester; a separated bikeway on the Gold Star Bridge; the Paper Mill Trail in Lisbon, and the segment of the East Coast Greenway which passes through Windham.

[11] Many studies are collected at https://www.adventurecycling.org/routes-and-maps/us-bicycle-route-system/benefits-and-building-support/economic-impact/,

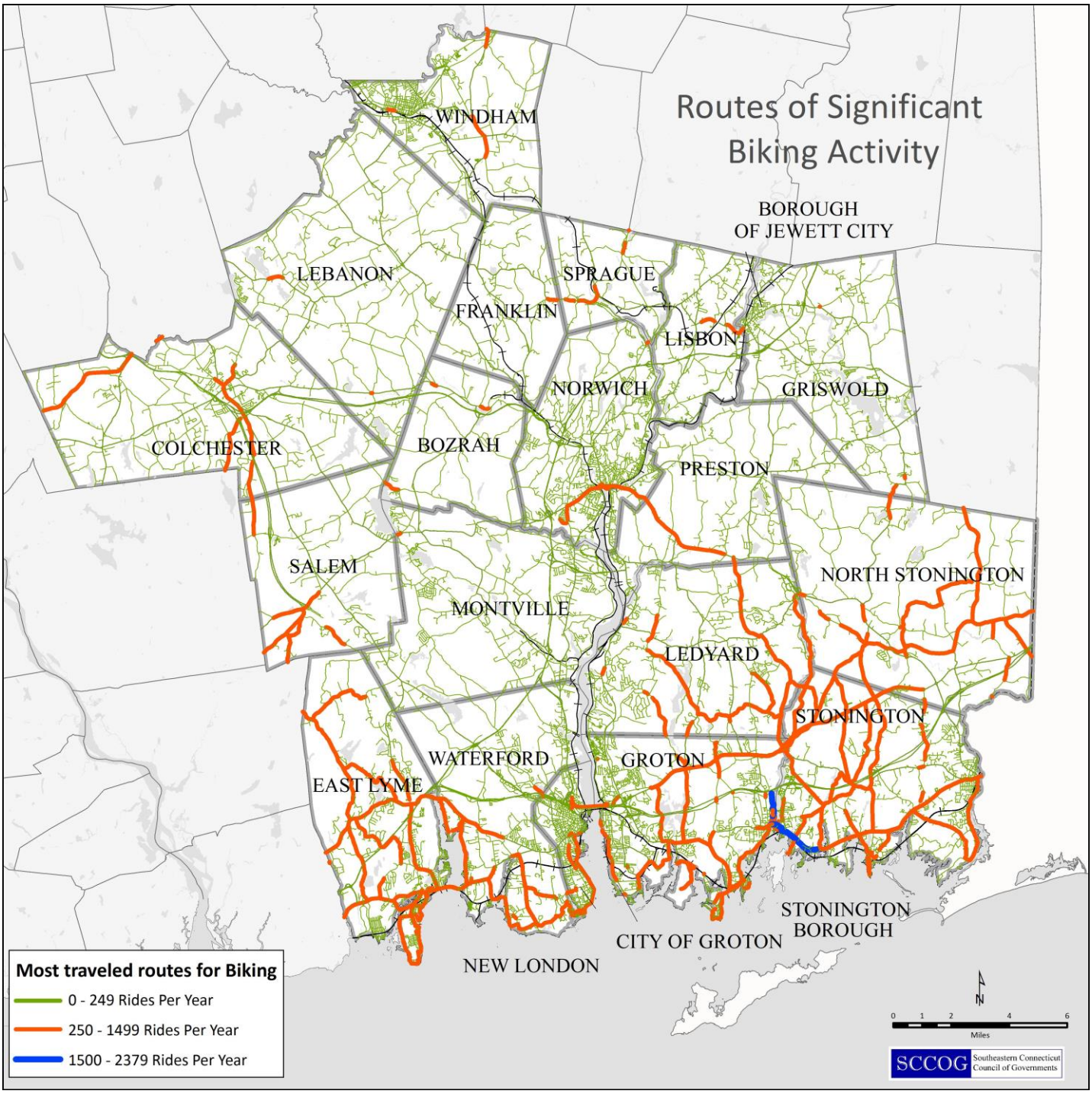
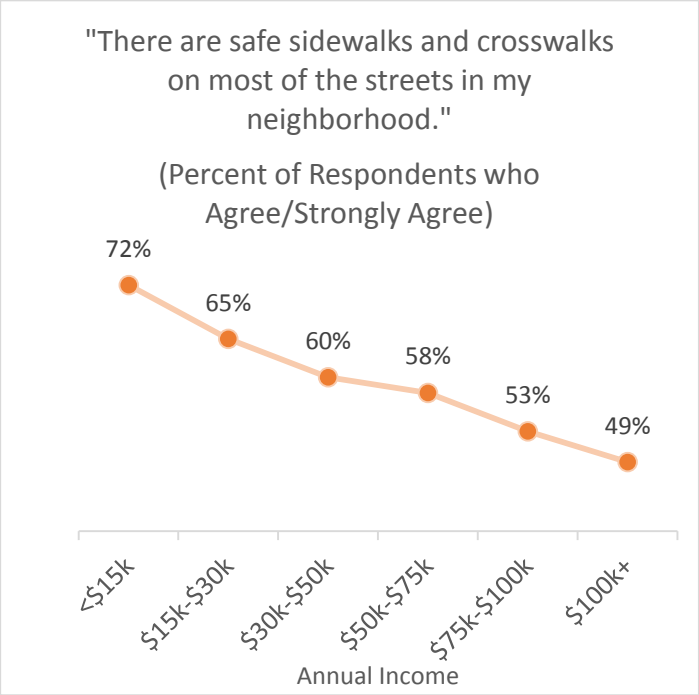


Figure 77. Measurable Bicycling Activity in Southeastern Connecticut.
Source: STRAVA. Strava data is self-reported by users of the service.

Southeastern Connecticut respondents to a wide-ranging survey conducted by the non-profit organization Data Haven indicated that safe sidewalks and biking routes are not available in many neighborhoods, especially suburban and rural communities and in high-income areas, areas which are usually co-located (Figure 78). Major federal and state policy shifts have occurred recently improving the financial feasibility of construction, maintenance, advocacy and education for biking and walking modes. In 2009, Connecticut passed a Complete Streets law mandating consideration for all users (bikes, pedestrians and the disabled in particular) in all publicly-funded roadway planning, design, construction and maintenance projects. Since that time, the State has established a Bicycle and Pedestrian Advisory group, approved a Department of Transportation Complete Streets Policy, passed legislation to require a minimum of three feet passing distance around cyclists and to increase fines related to the injury of bicyclists and pedestrians, and expanded engineering discretion for design of facilities to better accommodate pedestrians and cyclists. Despite this policy shift at the federal and state levels, only one town in southeastern Connecticut, Stonington, has adopted a local Complete Streets policy.

Southeastern Connecticut is home to several volunteer-based bike shares, most notably Mystic Community Bikes, which boasted 1,165 rentals in 2015, with seven rental locations in the Mystic areas of Groton and Stonington. Ridership has tripled since the service was introduced in 2011. Bike share programs exist on several college campuses in the area. A volunteer-led program in New London is currently dormant.



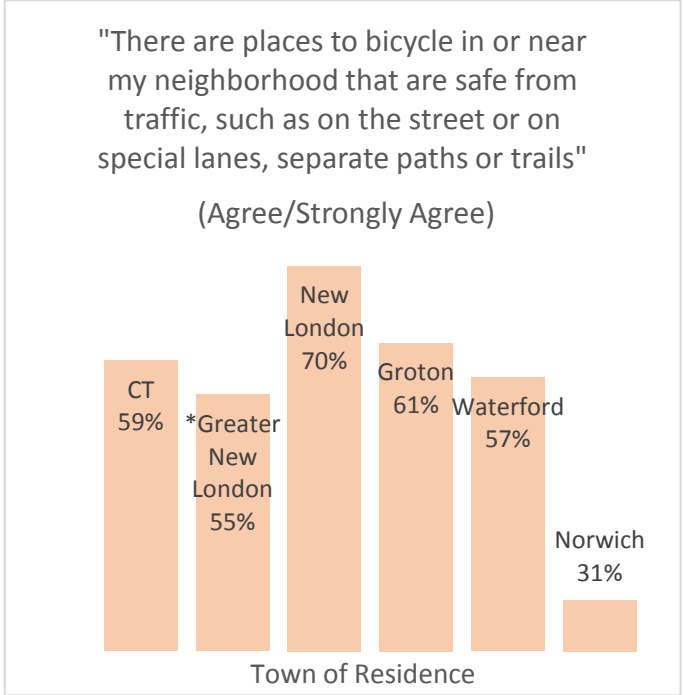


Figure 78. Attitudes about Conditions for Walking and Biking.
Source: 2015 DataHaven Community Wellbeing Survey. *Greater New London in this data set includes East Lyme, Groton, Ledyard, Lyme, Montville, New London, North Stonington, Old Lyme, Stonington, and Waterford.

Transportation Safety

The rate of traffic fatalities in southeastern Connecticut is higher than the statewide average. From 2006 to 2014, 288 people lost their lives on southeastern Connecticut roadways, 31% more than would be expected in this region at the statewide rate for traffic fatalities.[12] Crashes related to driving under the influence were 59% more frequent in the region than statewide during the same period.

On the Horizon

The SCCOG 2015-2040 Regional Long Range Transportation Plan outlined the following goals for the region (emphasis added)

1. Through the planning process, direct transportation infrastructure investments toward supporting **public safety, maintaining the infrastructure, reducing congestion** and where practical, long-term, sustainable, regional **economic development growth**.

2. Ensure that, to the fullest extent practicable, infrastructure investments are environmentally balanced, safe, efficient and modally integrated.

3. Develop a regional transportation system that **meets the needs of all segments of the resident population as well as visitors**, regardless of age, income, or disability, providing access to all parts of the region and to important points beyond its borders.

4. Reduce congestion and increase highway capacity by giving priority to non-automotive (transit) improvements.

Toward those ends, the 2015-2040 Regional Transportation Plan identified the following six projects as the region's highest priorities for transportation:

- Complete Route 11 from Salem to I-95 in Waterford. (Note: the federal government announced in 2016 that it will no longer be pursuing a required EIS for this project, essentially meaning that it will not be funded.)

- Improve capacity of I-95 from Branford to the Rhode Island state line.

- Improve Routes 2, 2A, 32 including new Route 2A bridge over the Thames River.

- Expand the regional bus system to address the region's expanding public transportation needs, both local and tourism-related.

- Provide more frequent Shoreline East passenger rail service from New London to New Haven.

- Preserve and enhance Union Station in New London as a regional, multi-modal transportation facility. Improve the linkage between various transportation providers in the vicinity of the station, with CT DOT assuming an ownership or managerial role in the operation of the station.

Additional objectives included:

- Develop alternatives to single-occupancy vehicle transportation, including minibuses, ferries, special vehicles, bicycle and pedestrian ways, and rail.

- Revive passenger rail service (Worcester and Vermont lines).

[12] National Highway Traffic Safety Administration Fatality Analysis Reporting System (county data), State of Connecticut Department of Transportation crash statistics (MPO data).

- Develop water taxi service in New London.
- Promote the expansion of ridesharing through car-pooling, van-pooling and the increase use of commuter parking lots.

The Southeastern Connecticut Council of Governments is currently producing its first Bicycle & Pedestrian Plan, expected to be completed in 2016.

The State of Connecticut is in the midst of identifying funding and financing strategies that would support an expanded investment in transportation infrastructure, but at this point funding available from the state and federal government is limited. The Regional Long Range Transportation Plan notes (emphasis added):

"Given the order of magnitude of the cost of any one of the major projects identified by the region as needed, it is clear that the **public resources will simply not be available** to fund many of them, even over a thirty-year period, **despite the fact that these needs are real**. Quite simply, this means that either a) new public-private financial partnerships will have to be created to share the financial burden of these project, b) other sources of revenue, such as tolls, will have to be explored, or c) hard performance-based decisions will have to be made regarding the priorities for infrastructure investment."

Potential Transportation Game-Changers

In addition to uncertainties over whether funding will be available to expand necessary infrastructure is uncertainty about how demand for transportation infrastructure may shift in the future. New technologies like Google Maps and Waze, which both use crowd-sourced data to improve traffic information, have already begun to affect driver behavior, with real-time data about traffic delays instantly rerouting users of these services to less crowded streets. Transportation industry analysts are estimating that driverless cars will be widely accepted and employed within the next ten years, a development that may have a major impact on how roadways are used and managed.

An array of global and national trends are significantly impacting how transportation services are managed and utilized. From federal infrastructure investments to adoption of automated vehicle technologies, Southeastern Connecticut will need to be prepared to adapt to the following transportation developments:

- Continued expansion of ride-sharing and vehicle-sharing services such as Uber, Lyft, and Zipcar
- Improvements to customer experience of bus passengers due to the availability of real-time arrival information or prioritized bus lanes (as of January 2016, a real-time arrival system has been installed on all SEAT buses and is undergoing testing)
- Expansion of alternative-fueled vehicles
- Changes to pricing of fuels and roadway use, such as tolls or vehicle-miles-travelled charges
- Widespread use of self-driving vehicles
- Expanded state investment in transportation, including widening of I-95, improvement of rails facilities, expansion of bus service, and investments in the State Pier (as recommended in Let's Go CT!)
- Federal investment in high-speed rail (as proposed in the NEC Future Northeast Corridor Tier 1 Environmental Impact Statement).

UTILITIES

Millstone Power Station, Waterford; New London Waste Water Treatment Plant. Sources: US Nuclear Regulatory Commission, Google Earth.

WATER AND SEWER

The region's water and sewer systems are, for the most part, located in the most densely populated areas of the region and have influenced their development as such. The availability of water and sewer services are important factors in location decisions made by business and industry, and their availability allows for higher-intensity use of land. Since the last Regional Plan of Conservation of Development was adopted in 2007, SCCOG has worked with its member municipalities to seek regional approaches to an adequate water supply and transmission system. The planning for and development of the region's waste water treatment systems has been more of a local initiative.

Water Supply Systems

Within southeastern Connecticut, more than 100 community water supply systems exist to provide potable water to their customer base. The largest of these, with one exception, are municipally owned, while the others are privately owned or operated by the Southeastern Connecticut Water Authority (SCWA). Together, these systems serve approximately 75% of the region's population, and one-third of the region's land area.

Table 13 lists the largest of these systems in the region. All have average daily supply which exceeds the average daily demand. The Connecticut Public Utilities Regulatory Authority recommends a ratio of supply to demand of 1.15 or higher. All of the systems exceed this except for Stonington and New London, at 1.12 and 1.08, respectively. Short of developing new supplies at the individual utility level, a potential way of accessing additional supply in water-constrained areas would be the regional sharing of supplies through interconnections. Indeed, as is noted below in the Water Supply Planning section, in 2014 Aquarion Water Company and seven municipal water utilities applied to and received permits from the Connecticut Department of Public Health for sale of excess water.

Water Supply Planning

In 2009, SCCOG decided to take a more active role in responding to regional water supply by forming a Regional Water Committee. This committee is comprised of chief elected officials, and is supported by a Technical Advisory Subcommittee whose representatives are staff of the region's municipal and tribal water departments, along with a representative from the Southeastern Connecticut Water Authority (SCWA), which operates 15 small water systems in the region. The goal of this committee and its subcommittee is to encourage and support actions by its member municipalities and affiliate-member Native American tribes to develop

additional water supply sources and water supply interconnections, leading to the creation of a regional water supply system. In 2010, SCCOG adopted the Regional Water Priority Planning Document which recommended a series of new water supplies and interconnections classified as being needed in the near term, mid-term, or long term. In 2012, SCCOG had prepared an Intra-Regional Water Supply Response Plan for emergency transfers of water in the region, and in 2014 applied for and received the necessary permits to allow this to take place. Currently, the SCCOG, its member municipalities, and the region's water utilities are participating in the Eastern Connecticut Water Utility Coordinating Committee (WUCC), which will prepare and adopt a coordinated water system plan for all of eastern Connecticut. That plan will become part of the State Water Plan required by legislation to be delivered by July 1, 2017.

Public Water Supplies in Southeastern Connecticut Serving > 1,000 People					
Water System (noting primary and secondary municipalities served)	Average Daily Demand (MGD)	Daily Supply (MGD)	Ratio Daily Supply: Demand (Margin of Safety)	Est. 20-Year Future Increase in Population Served	Potential Sources of Additional Water Supply
Est. Regional Capacity (Sum of Systems)	30.21	49.78	1.65	-	-
Colchester Water & Sewer Commission	0.34	0.75	2.21	15%	Wells, interconnections
East Lyme Water & Sewer (2012)	1.81	2.50	1.38	17%	Wells, interconnections
Griswold- Jewett City Water Company (Lisbon)	0.55	0.91	1.66	-25%	-
Groton Long Point Association	0.12	0.35	2.88	-20%	-
Groton- Noank Fire District	0.20	0.25	1.25	17%	-
Groton Utilities	5.70	12.60	2.21	0%	Wells, reservoirs, dam improvements
Ledyard SCWA- Tower-Ferry Division	0.27	0.88	3.32	0%	-
Ledyard WPCA- Gales Ferry System	0.14	0.25	1.79	8%	-
Ledyard WPCA- Ledyard Center System	0.14	0.35	2.43	25%	-
Mashantucket Pequot Tribal Nation (North Stonington)	1.18	2.45	2.07	NA	Wells, interconnections
Mohegan Tribal Utility Authority	0.64	1.45	2.26	NA	-
Montville- SCWA- Montville Division	0.09	0.22	2.49	0%	Wells, interconnections
Montville Water Supply (WPCA)	0.47	0.84	1.77	28%	Wells, interconnections
Mystic- Aquarion (Stonington)	1.34	2.10	1.57	25%	Well, interconnections
New London Dept. of Utilities (includes Waterford WPCA Demands)	5.25	6.62	1.26	15%	Reservoirs, wells, interconnections
North Stonington- SCWA- North Stonington Division	0.05	0.18	3.68	-35%	Interconnections, new sources
Norwich Public Utilities (Bozrah, Franklin, Lebanon, Montville, Preston,	4.54	6.33	1.39	19%	Wells, reactiving inactive resevoirs, backwash recycling at treatment plants
SCWA- Mohegan Division (N. Stonington)	0.07	0.23	3.24	0%	Interconnections, new sources
Sprague Water & Sewer Commission	0.06	0.19	3.03	-12%	Interconnections, reactivating inactive reservoir
Waterford Utilities Commission	1.90			1%	Interconnections, new sources
Westerly Water Department (N. Stonington, Stonington)	3.30	6.30	1.91	19%	Reactivating existing and new wells; new sources
Windham Water Works	2.30	4.10	1.78	16%	Additional reservoir withdrawals, interconnections

Table 13. Public Water Systems Serving >1,000 People in Southeastern Connecticut.
Source: Eastern Connecticut Public Water Supply Management Area Final Water Supply Assessment, December 2016. Data is a compilation from various sources including regulatory agencies, public water supply representatives, municipalities, and regional planning organizations.

Sewer Systems

Southeastern Connecticut is served by 17 sewage systems and 14 wastewater treatment plants. The region's sewer service areas and nearby areas of undeveloped land are shown in Figure 79. Like the region's water systems, the sewer systems in southeastern Connecticut are located within and influence the location of the region's more densely populated and developed areas. The most extensive sewer systems are located in East Lyme, Groton, Montville, New London, Norwich, Stonington, Waterford and Windham. Bozrah, Lebanon, North Stonington, and Salem have no sewer service, while Franklin, Lisbon, Ledyard and Preston have limited sewer service. The Mashantucket Pequot Tribal Nation operates its own sewer treatment facility which serves the Foxwoods casino and other land uses on the Tribal Reservation. In terms of land area, it is estimated that approximately eight percent of the region's total land area and 20 percent of the region's developed land area is served by sewers.

Where density and land use do not require public sewer systems, private septic systems are used to treat wastewater. With today's public health code and with the technology used to construct onsite septic systems, there is much less chance for groundwater contamination than when the region's sewer system was first being developed. Because of the high costs associated with extending sewer lines and constructing new treatment plants, along with the difficulty in meeting the requirements to have a new outfall permitted, most new development in the region will be located within existing sewer service areas or will utilize onsite treatment systems.

Sewer System Planning

The Southeastern Connecticut Regional Planning Agency, SCCOG's predecessor agency, prepared a Recommended Regional Sewerage Plan in 1969. While the region's population has grown and its land use patterns have changed and spread since that time, the recommendations contained in this plan remain applicable. The plan predicted that by 1980, there would be 18 sewage treatment plants in the region, and instead recommended that number could be reduced to 13 if inter-municipal systems were used. The plan did recommend the formation of a Regional Water Pollution Control Agency, something that has never happened. Rather, the cooperative agreements that have allowed for one municipality to send wastewater to another's treatment plant have come about through informal voluntary action. In recent years, some SCCOG member municipalities have asked the Regional Water Committee to consider taking on the task of coordinating a regional approach to treating waste water, but as of this writing, the SCCOG Regional Water Committee has not agreed to take this on, preferring instead to see interested municipalities explore and form their own inter-local agreements.

Solid Waste

The Southeastern Connecticut Regional Resources Recovery Authority (SCRRRA) is composed of twelve municipalities located within the SCCOG planning region to implement solutions for solid waste, recyclables, household hazardous waste and other waste materials. The Authority operates a waste-to-energy facility located in Preston. Seven of the region's municipalities are not members of SCRRRPA and provide for solid waste services through town or individual service contracts.

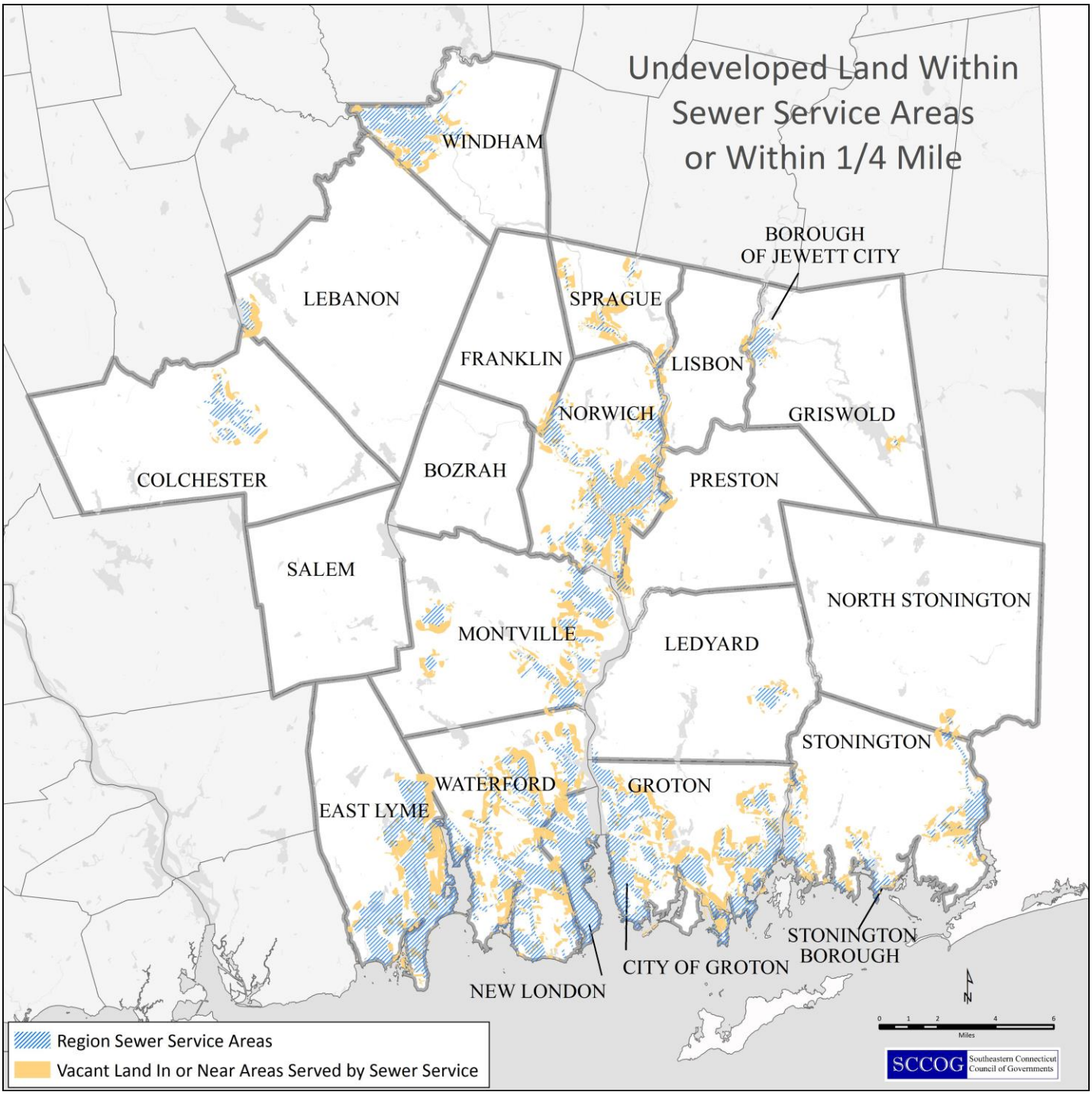


Figure 79. Sewer System Areas and Undeveloped Land with 1/4 Mile of Service.
Source: CT DEEP. Sewer area information is current as of 1998, but shows minor updates to New London and Waterford in 2006.

ENERGY

Electricity

Eversource Energy (previously Northeast Utilities) is the energy distributor to most of southeastern Connecticut's municipalities. Groton Public Utilities serves the City of Groton and large portions of the Town of Groton.[13] Bozrah is served by Bozrah Light and Power, a division of Groton Public Utilities. Norwich Public Utilities provides electricity to Norwich residents and businesses.

Southeastern Connecticut is home to two large power generation sites and a number of smaller facilities (Figure 80). Millstone Power Station is a nuclear power plant in Waterford which generates almost half of all electricity produced in Connecticut. The two units at Millstone Power Station are permitted through 2035 and 2045. The other major power plant in the region is the NRG Montville site, which runs on petroleum. Other smaller generating stations generate electricity from petroleum, natural gas, hydroelectric, biomass and solar.

Connecticut General Statute section 16a-3a requires that the Department of Energy and Environmental Protection (DEEP) prepare an Integrated Resource Plan every two years to assess future electric needs and create a plan to meet those future needs. The 2014 Integrated Resource Plan concluded that enough alternative power sources exist to temporarily cover the loss of one of the two Millstone nuclear units, but that a permanent closure would be more difficult to address. The 2014 Integrated Resource Plan recommends careful monitoring of the market and regulatory viability of Millstone in subsequent Plans[14].

[13] State of Connecticut. Utility by Town List, 2014.

[14] State of Connecticut Department of Energy and Environmental Protection, "2014 Integrated Resources Plan for Connecticut ," p14.

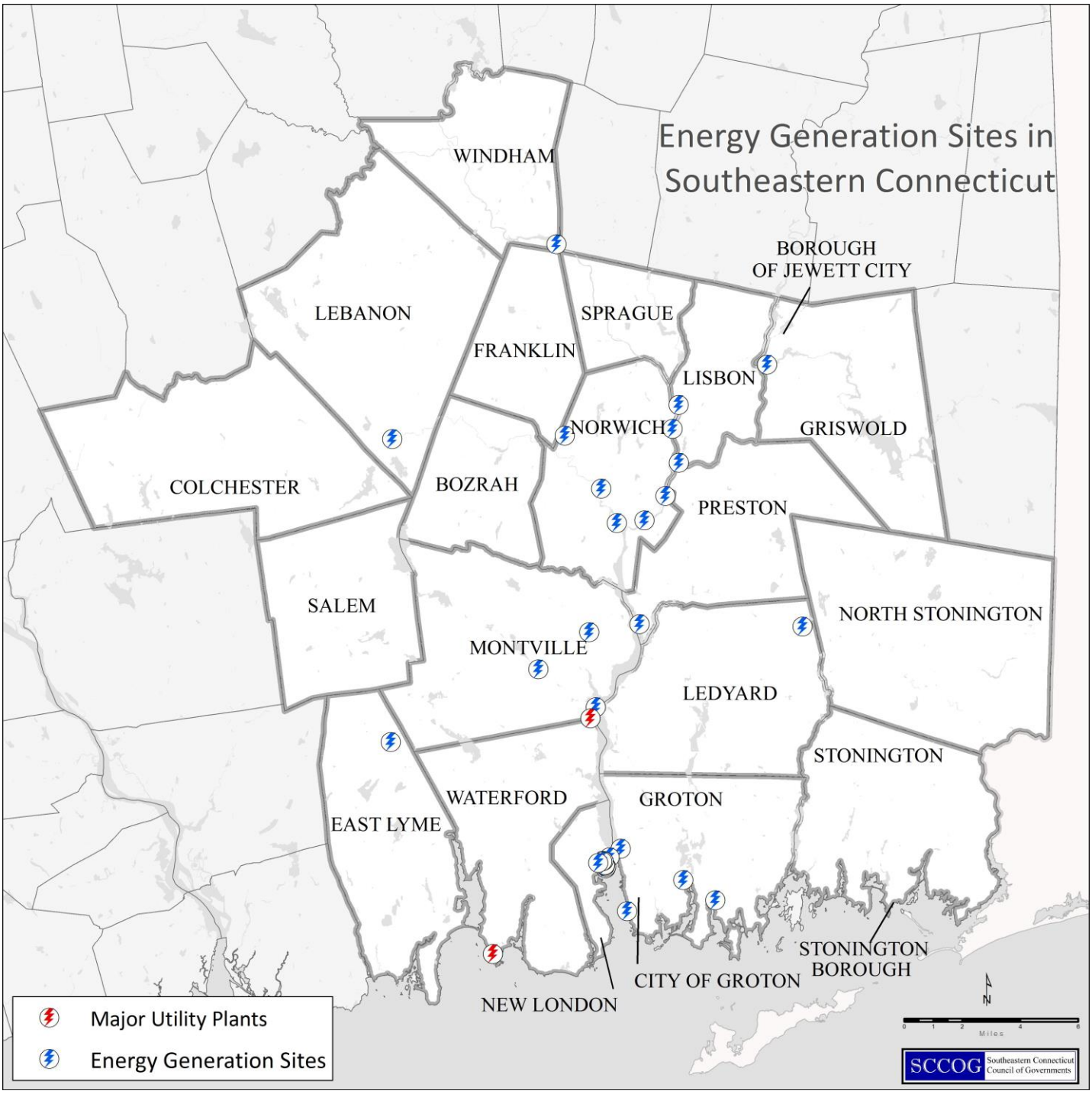


Figure 80. Energy Generation Sites.
Source: U.S. Energy Information Administration.

Natural Gas

The use of natural gas as a home heating fuel is far less common in southeastern Connecticut than elsewhere in the state, with only about 14% of households heating with it, compared to 33% statewide (Figure 81). Eversource Energy (previously Yankee Gas), Spectra Energy, and City of Norwich Public Utilities supply natural gas to southeastern Connecticut communities.[15] The region's renters are much more likely to have heating systems powered by natural gas than are owner-occupied households (23% vs. 10%), but also more likely to depend on electric heat (36% of renters and 10% of owners).

Figure 82 shows the extent of natural gas availability in the municipalities served by Eversource. Only New London is served in nearly all neighborhoods. The 2013 Natural Gas Expansion Plan developed jointly by Connecticut's natural gas distributors showed fewer than 1,000 additional potential customers along existing natural gas mains in each of southeastern Connecticut's towns, and indicated that future expansion of natural gas mains would only occur if a major anchor user could justify the cost of expansion or if conducted as part of system reliability project.[16] A two-mile expansion project in 2015 brought access to natural gas to parts of Franklin and Bozrah.[17]

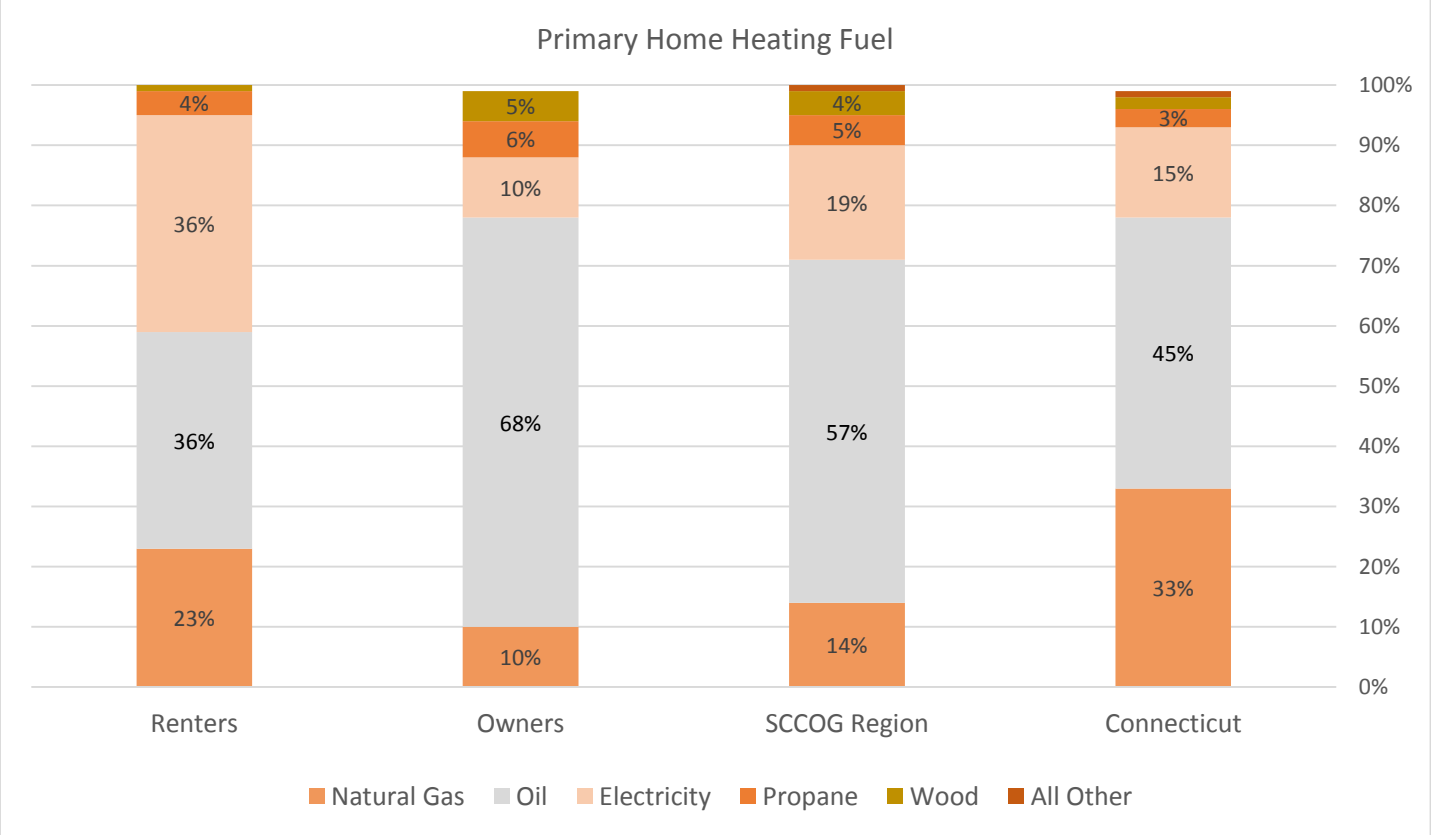


Figure 81. Primary Source of Fuel for Heating.
Source: 2014 Five-Year American Community Survey. Other sources include solar and coal.

[15] State of Connecticut. Utility by Town List, 2014.

[16] Connecticut's Gas LDCs Joint Natural Gas Expansion Plan, 2013.

[17] Eversource Energy. "Franklin-Bozrah Expansion Project." Retrieved May 9, 2016.

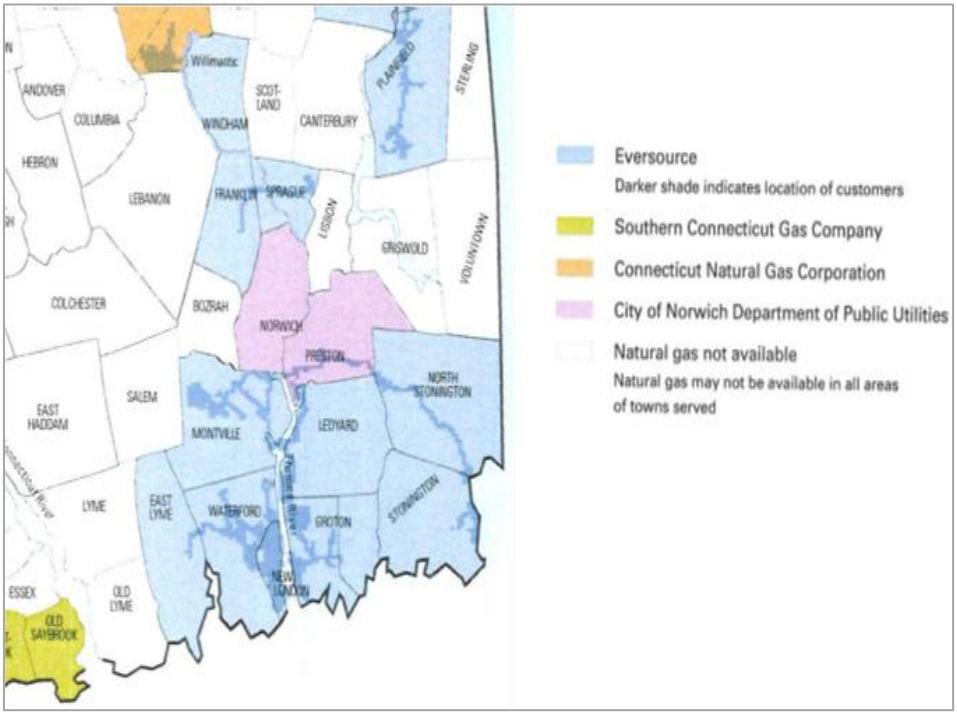


Figure 82. Natural Gas Service Areas.
Source: Excerpted from Eversource territory map dated January 23, 2015.

Clean Energy and Energy Efficiency

Nearly all of the SCCOG's member municipalities eligible to participate in EnergizeCT's Clean Energy Communities program have pledged to reduce municipal building energy consumption by 20% and to purchase 20% of municipal electricity from clean energy sources by 2018.[18] Most SCCOG communities have also signed on to the C-PACE program (Commercial Property Assessed Clean Energy), which allows loans for efficiency improvements to be repaid via property tax assessment obligations that transfer to future property owners.[19]

Small on-site or district-based power solutions are gaining in popularity nationally, including fuel cells, rooftop solar and solar farms, co-generation, micro-grids and district heating and cooling. These technologies may form a larger part of southeastern Connecticut's infrastructure in the future.

[18] North Stonington is not a Clean Energy Community. Bozrah and Norwich are not eligible for the program because they are served by municipal utilities.

[19] Towns not participating in C-PACE are Lisbon, Bozrah, Lebanon, Colchester, and Salem.

Telecommunications and Internet Access

High-speed internet connections are available in most of the region, per information gathered by the Federal Communications Commission (FCC) (www.broadbandmap.gov). According to Data Haven's survey of Greater New London residents, 86% have access to the internet through either a computer or smart phone (Figure 83). Non-Hispanic White and Hispanic residents in southeastern Connecticut are more likely to have access to the internet through a computer or smartphone than are African-American households. While internet access does increase by income, nearly two-thirds of households in the lowest-income bracket have a computer or smartphone. Access to the internet is important for education and business development, for finding employment, and for connecting with available social services.

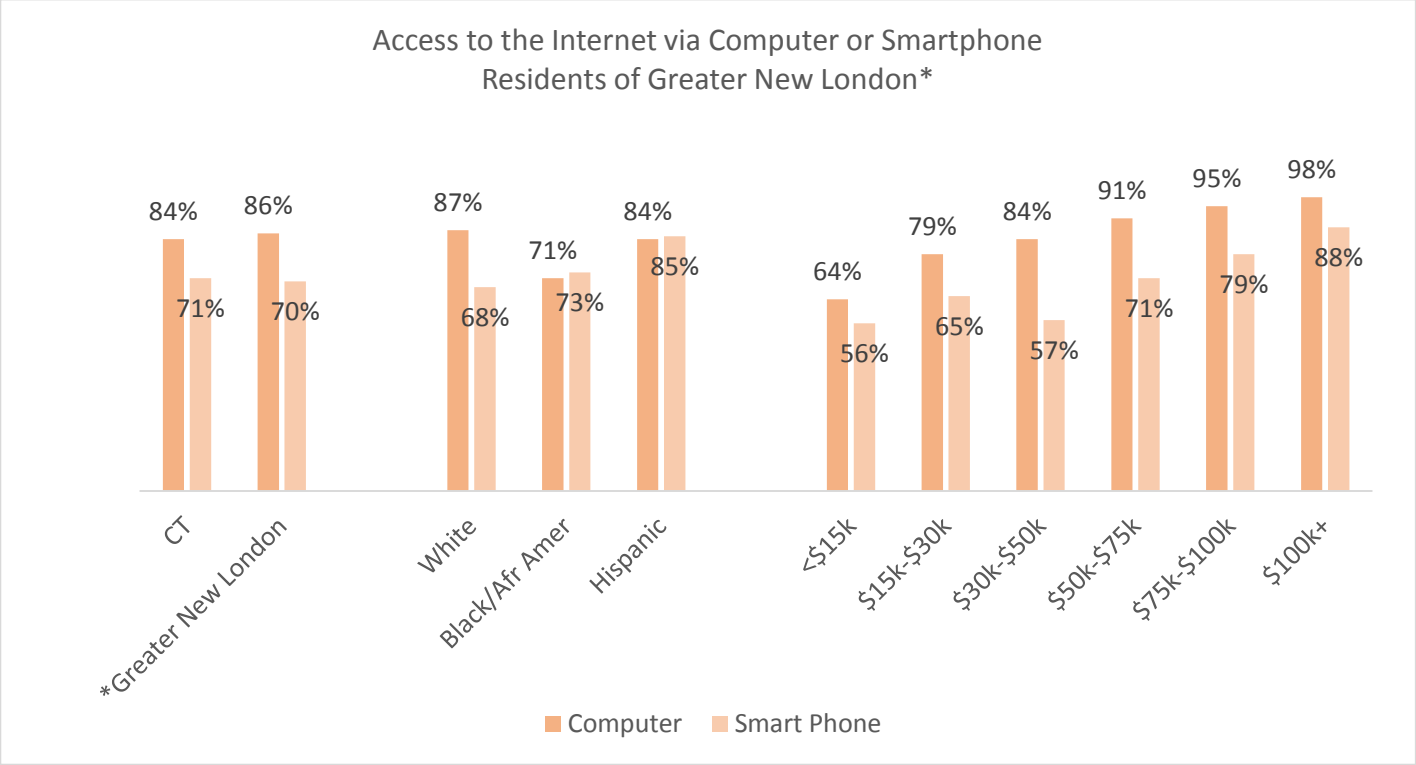


Figure 83. Possession of Devices with Access to the Internet.
Source: 2015 DataHaven Community Wellbeing Survey. *Greater New London in this data set includes East Lyme, Groton, Ledyard, Lyme, Montville, New London, North Stonington, Old Lyme, Stonington, and Waterford.

AGRICULTURE



Local Agriculture: Maple Lane Farms, Preston; Goats at Beltane Farm, Lebanon; New London Farmers Market at L&M Hospital

Sources: CT Department of Agriculture, www.BeltaneFarm.com, Field of Greens Farmers' Markets.

A CHANGING INDUSTRY

Southeastern Connecticut has an abundance of quality soil for crop farming and good conditions for other types of agriculture (Figure 84). A quarter of the region's land is considered either Prime Farmland Soil or Statewide Important Farmland Soil. Prime farmland has the best combination of physical and chemical qualities for raising crops, and is available for that use (i.e. not built-upon).[20] Statewide Important Farmland Soils do not meet the definition of Prime Farmland but that are also capable of producing large crops. Farming in the region does not necessarily take place on Prime or Statewide Important Farmland Soils.

According to municipal land use data, 24,490 acres of land are currently used for agricultural purposes, 6% of the region's total area. Conservation programs that protect agricultural land from being developed for other uses protect 11,000 acres, 3% of the region's land area.

The United States Department of Agriculture (USDA) 2012 Census of Agriculture reports that the number of farms in New London County has increased by 40% since 2002 to a total of 949, with farmed acreage increasing by just 10% during the same period. The total market value of agricultural products sold from New London County has decreased from $122 million in 2002 to $118 million in 2012, illustrating that while farming activity has increased within the region, it does not reflect a large increase in farming profitability. About half of New London County farmers make farming their primary occupation, and they continue to get older. The share of farmers 60 years or older has increased in the last ten years from 39% to 51%.

What does local agriculture look like?

In 2012, New London County had:

- 3,800 dairy cows
- 70,000 chickens sold for meat
- 74,000 sq. ft. of greenhouses for tomatoes
- Harvested 18,000 Christmas Trees
- 51 orchards

From 2002-2012:

- Number of Farms increased 40%
- Farmed acreage increased 10%
- Value of products decreased 3%

Source: USDA 2012 Census of Agriculture.

[20] U.S. Department of Agriculture, Natural Conservation Service.

While traditional large agricultural activities such as dairy or egg production are easily identified by their fields and buildings, recent growth in agriculture activity has been in smaller-scale farms, which involve multiple activities in response to consumer demand and include the production or harvesting of organic vegetables, maple syrup, landscaping materials, nursery crops, ice cream, cheese, and marine animals. In short, agriculture is no longer only a soil-based activity which must occur

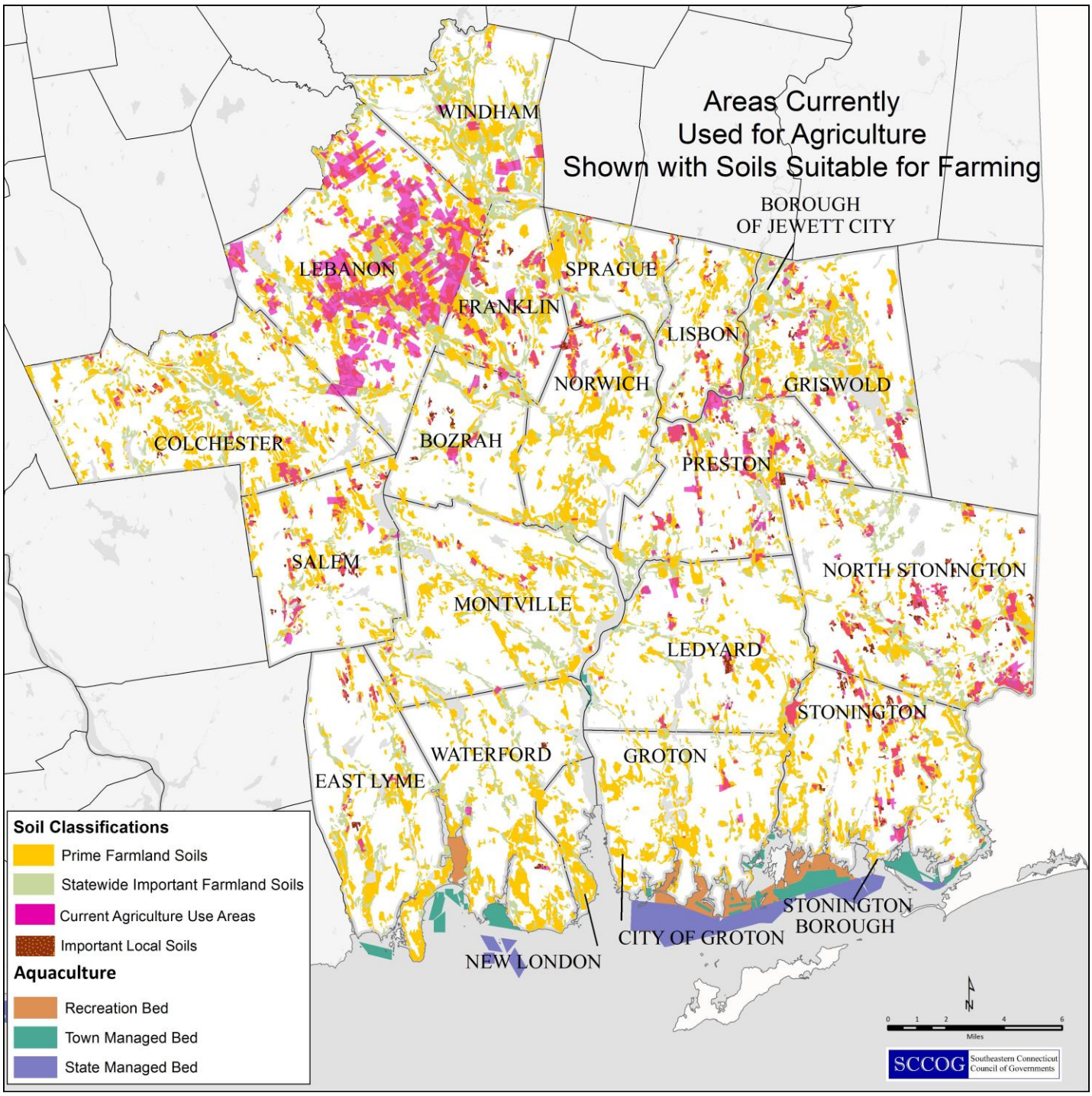


Figure 84. Farmland Soils and Current Agricultural Uses, Including Aquaculture.
Source: State of Connecticut, Municipal Land Use Data and UConn Center for Land Use Education and Research Aquaculture Mapping Atlas. clear3.uconn.edu/aquaculture.

outdoors. Agricultural products can also be produced in industrial warehouses or even on brownfield sites.

Hydroponic farming is becoming an increasingly effective alternative to traditional growing methods. Maple Lane Farms in Preston is currently the largest hydroponic producer in the state, having first raised mushrooms hydroponically and then converting to lettuce. The Commissioner of the Connecticut Department of Agriculture has speculated that Connecticut's well established greenhouse industry could make the transition to growing food year-round and has the customer base to support the activity.[21]

Aquaculture represents another non-traditional form of farming which includes shellfish production as well as fish raised in ponds or tanks. The Connecticut Department of Agriculture lists the present sales of Connecticut shellfish to be more than $30 million annually. There are more than 70,000 acres of shellfish farms under cultivation in Connecticut's coastal waters which include large areas along the southeastern Connecticut coast. According to the State of Connecticut, aquaculture is expected to be among the nation's fastest growing agriculture businesses in the next decade.

New Pressures on Maintaining Agriculture

Agricultural activities in southeastern Connecticut face many challenges. Suburbanization, land development, and fewer young people choosing to be farmers contribute to farm loss and to the loss of support of agriculture infrastructure such as equipment, product storage, and transport. The aging of the region's farmers suggests that farmland sales may accelerate in the coming decades. Farm fields are also attractive sites for solar farms, a potential source of alternative income for owners of farm land that would remove these lands from agricultural production.

Local Actions to Support Agriculture

A number of the region's rural towns have created agriculture commissions, with goals to encourage the continuation and expansion of this important land use and economic endeavor.[22]

According to a 2012 planning guide produced by American Farmland Trust and the Connecticut Conference of Municipalities, flexibility is required in order for agriculture endeavor's to respond to new consumer trends.[23] The present trends include:

- Demand for locally grown agricultural products
- Agricultural Tourism
- Home gardening and landscaping

At present the flexibility for agricultural activities to respond to consumer trends typically involves such actions as:

- The ability to sell products at farm sites. This can range from small stands to outlet stores and also include pick-your-own activity.
- The ability to sell or utilize products produced elsewhere.
- The ability to process products on-site into value-added products such as baked goods or wine.
- The ability to co-locate with compatible businesses such as machinery repair shops, sawmills, bed and breakfasts, and other related businesses which can help improve operator profitability.

[21] State of Connecticut Department of Agriculture. Connecticut Weekly Agricultural Report. March 17, 2015.

[22] Bozrah, Colchester, Franklin, Lebanon, and Sprague have formed agricultural commissions.

[23] American Farmland Trust and Connecticut Conference of Municipalities, "Planning for Agriculture." 2012. Ctplanningforagriculture.com.

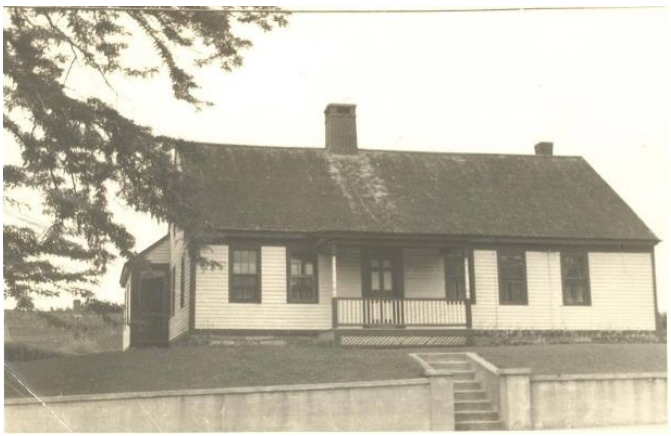
Historic Resources



196 Bank Street, New London (built c. 1760); Home in Griswold (built c. 1790); Fort Trumbull, New London.
Source: Google Street View, State of Connecticut.

As one of the oldest regions in the United States, southeastern Connecticut has a wealth of historic properties. Well-known places like Mystic Seaport, downtown New London, and downtown Norwich draw tourists to the region as well as serving as activity hubs for locals. Southeastern Connecticut historic sites are part of the Connecticut Freedom Trail (CFT), which includes historic districts, sites, buildings, structures and objects of national, state or local significance to Connecticut's African American history and that of the State of Connecticut. There are 15 Freedom Trail sites in southeastern Connecticut, including abolitionist David Ruggles' grave in Norwich and the former home of blacksmith Isaac Glasko in Griswold's Glasgo Village.

Figure 85 displays the locations of buildings or districts in southeastern Connecticut that are currently listed on the National and State Registers of Historic Places, making them eligible for state and federal grant programs. Locations in Windham listed on the State Register have not yet been digitized for mapping. Properties of historic value are part of the fabric of nearly all places in the region, with 25% of the region's housing built prior to 1940.[24] While the post-World War II era introduced new stand-alone shopping centers and residential subdivisions to the region, many of the region's commercial areas and residential neighborhoods were founded in earlier times and have been reused and modified for today's purposes. The share of housing stock in each community built prior to 1940 ranges from a high of 52% in New London to only 4.5% in Ledyard. High shares of older housing are found in New London, Sprague (43%), Norwich (39%), Windham (35%), and Stonington (34%). Deterioration is most likely to occur where older housing coincides with low home values.



Above Griswold Home as photographed in the 1930s for the Works Progress Administration Architectural Survey of Connecticut.

[24] U.S. Census 2014 5-Year American Community Survey.

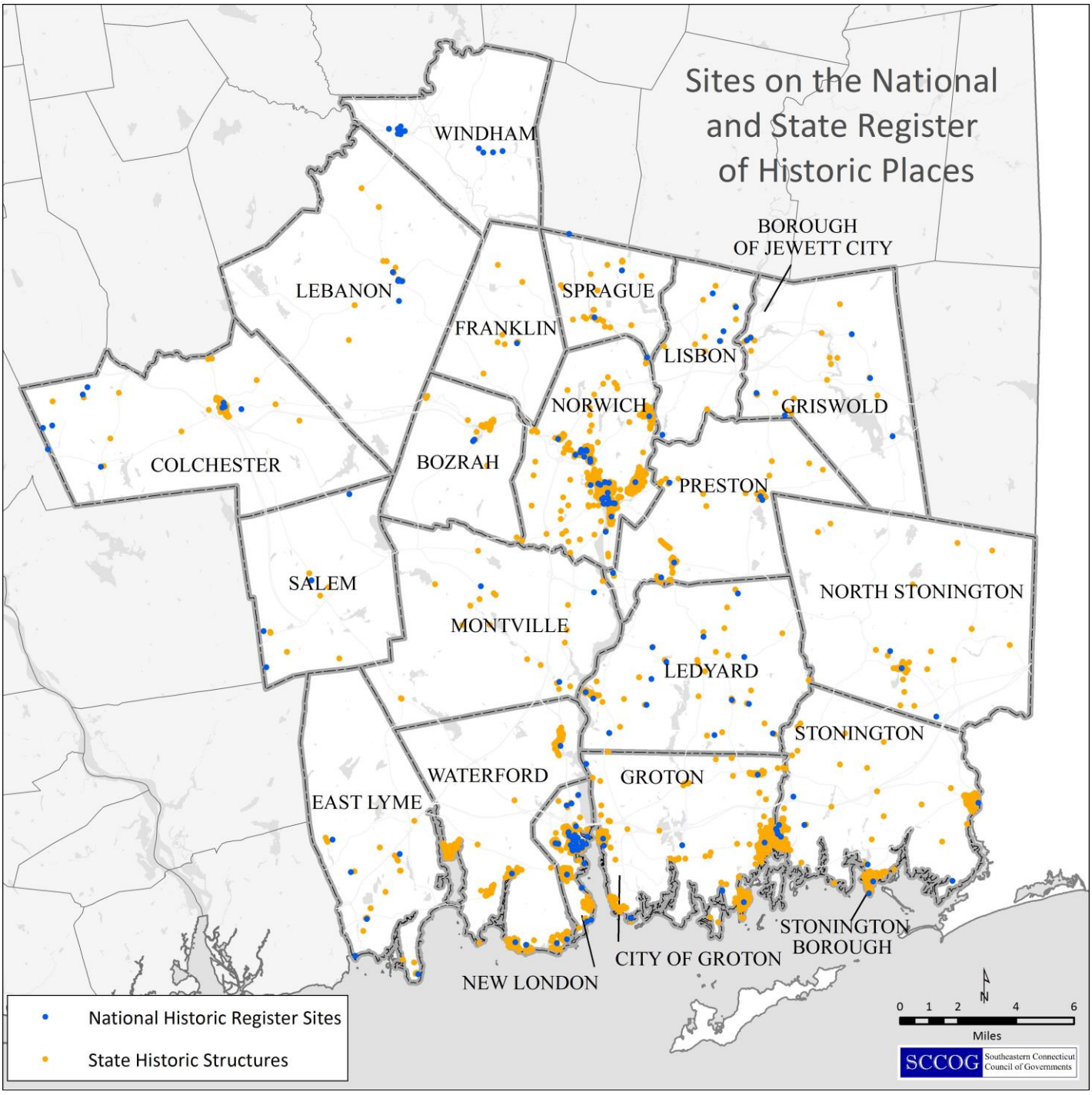


Figure 85. Sites Listed on the State and National Registers of Historic Places.
Source: Connecticut State Office of Historic Preservation.

Natural Resources

Harkness State Park, Waterford; Roseate Terns; Morgan Chaney Wildlife Sanctuary, Montville.
Sources: Roseate Terns: U.S. Fish and Wildlife Service Southeast Region.

Natural Diversity and Critical Habitats

Southeastern Connecticut is home to diverse habitats that support both marine and inland species. Figure 86 presents information from the State of Connecticut's Department of Energy and Environmental Protection (DEEP), which maintains a Natural Diversity Database to help landowners pursuing development to preserve the state's biodiversity. Areas on the map shaded as "Natural Diversity Areas" depict approximate locations of state and federally listed endangered or threatened species for which DEEP will provide guidance to property owners for avoiding negative impacts. Nearly 300 plant and animal species are threatened, endangered, or are of special concern within New London County.[25] Critical habitats are areas designated by DEEP as ecologically significant areas with specific diversity that should be prioritized for land conservation. DEEP notes that Critical Habitat data may not be inclusive of all critical habitats and should be supplemented with on-site reviews.

[25] Connecticut DEEP. New London County: A County Report of Connecticut's Endangered, Threatened and Special Concern.

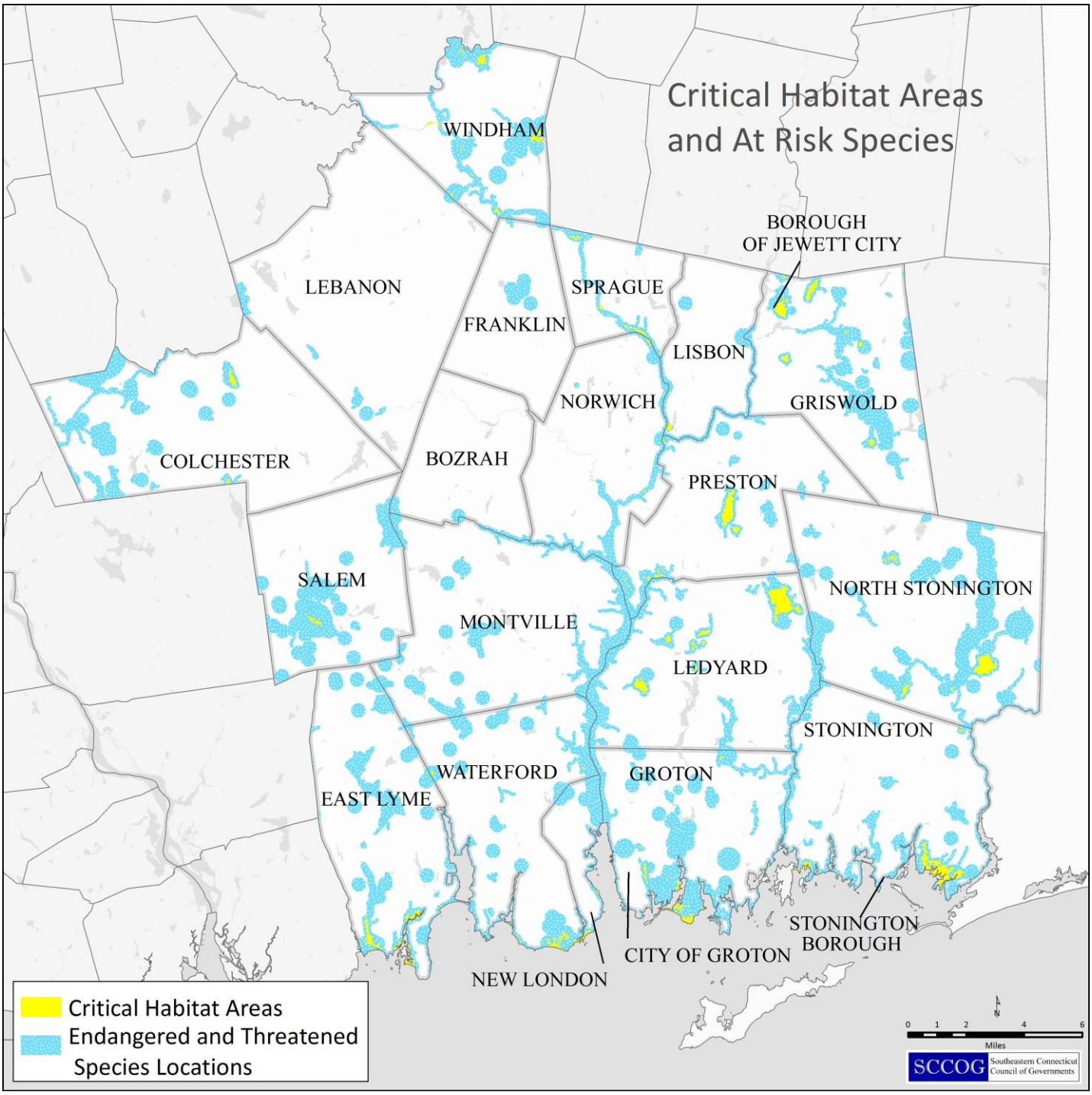


Figure 86. Critical Habitat Areas and Locations for Endangered or Threatened Species.
Source: CT DEEP.

PARKS & OPEN SPACE

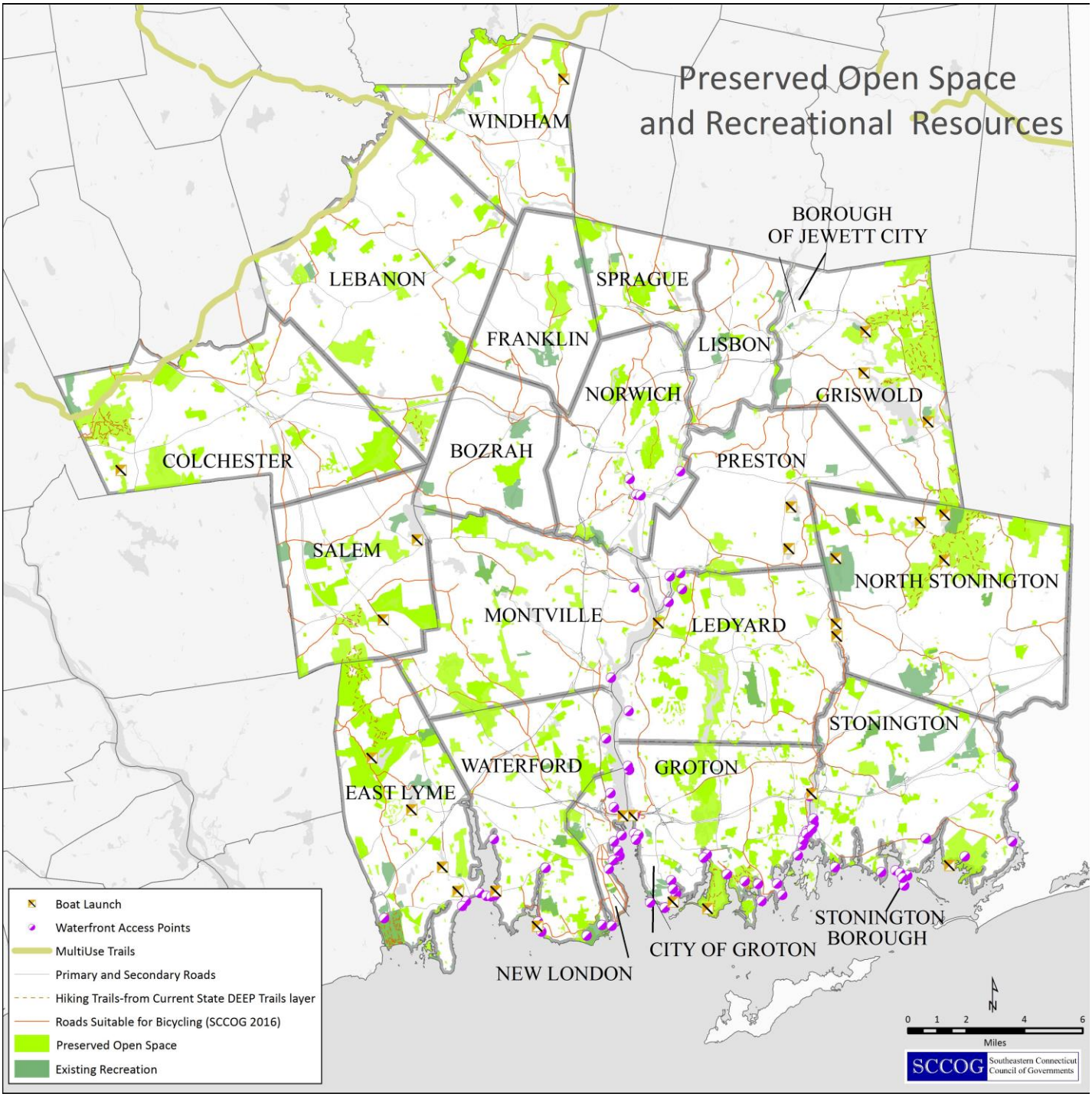


Figure 87. Open Space and Recreational Resources.
Source: SCCOG, State of Connecticut.

Southeastern Connecticut contains an excellent variety of parks and other opportunities for outdoor recreation (Figure 87). Facilities include public beaches, state parks, hiking and multi-use trails, and water access points for motorized and non-motorized boating. The condition of public parks was rated *good* or *excellent* by 77% of local respondents to the Community Wellbeing Index survey, higher than the state-wide average (Figure 88). Urban residents in Norwich and New London ranked the condition of their parks lower than average.

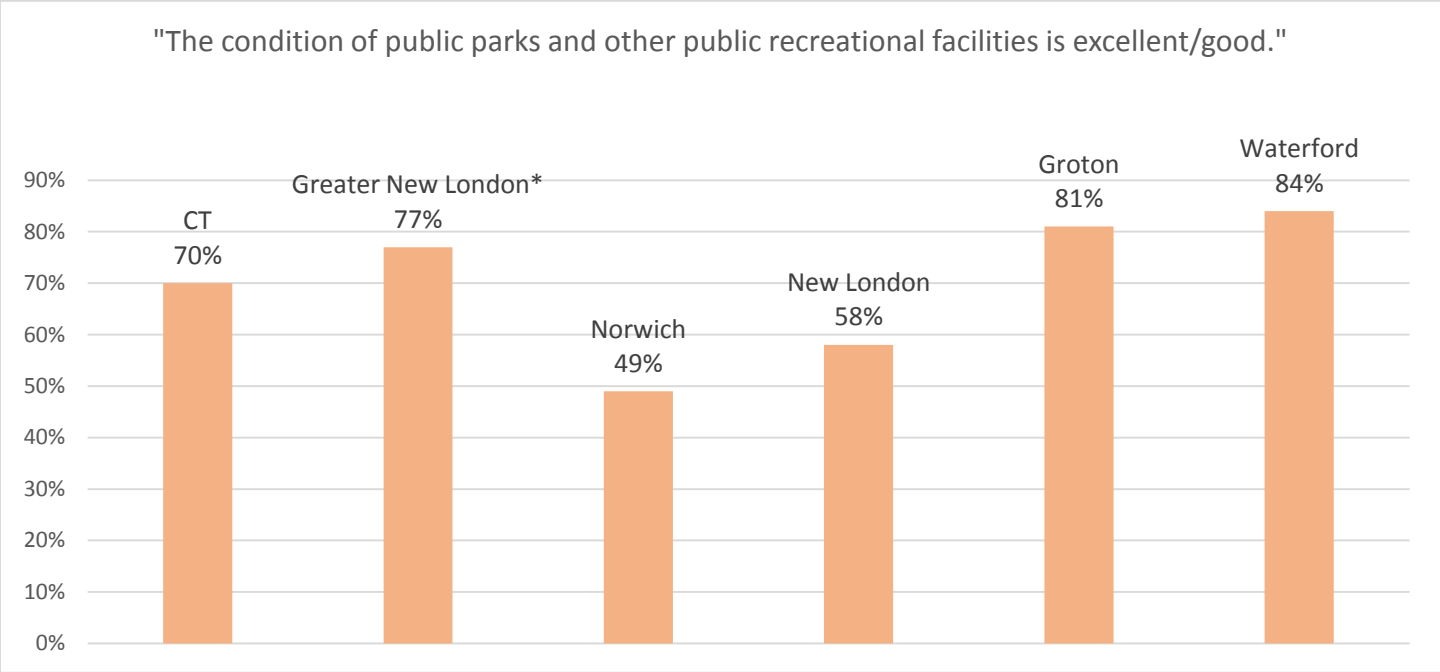


Figure 88. Opinions on Public Parks & Recreation Facilities.
Source: DataHaven. *Greater New London in this data set includes East Lyme, Groton, Ledyard, Lyme, Montville, New London, North Stonington, Old Lyme, Stonington, and Waterford.

Water Resources

Watersheds

Watersheds are prime examples of natural resources that require regional cooperation to protect, since they often cover multiple towns or cross state boundaries (Figure 89). The watersheds in southeastern Connecticut are complex, with smaller watersheds converging into the larger Thames River Main Stem, which includes parts of eight different municipalities.

Wetlands

Connecticut designates its wetlands based on soil composition. The soil survey conducted by the US Department of Agriculture Natural Resources Conservation Service tags wetland soils as poorly and/or very poorly drained, alluvial, or floodplain. Figure 90 shows the extent of these soils. Connecticut statute requires municipalities to regulate activities that impact inland wetlands and watercourses. Recognition is growing of the value of wetlands as a habitat for mammals and plants, and as an important flood control resource. Wetlands in the region make up another piece in the anatomy of water resources providing aesthetic, natural, and engineering value to the land.

Water Quality

Figure 91 shows the range of water conditions found in the region's surface waterbodies and groundwater. The widespread use of public and private wells to supply drinking water relies on the presence of drinkable groundwater, which is found in most of the region. Only one small area of Windham has groundwater considered not suitable for drinking, while areas with high-intensity land uses, generally urban neighborhoods or village centers, must treat groundwater to remove potential contaminants. Additional areas include conditions where high quality groundwater is threatened or impaired.

Aquifer protection areas are well fields and areas of groundwater recharge or contribution identified as a component of the State of Connecticut's Aquifer Protection Area Program, which requires local municipalities in which there are Level A or Level B aquifers to appoint an existing board or commission to act as the Aquifer Protection Agency. The designated local agency is responsible for adopting land use regulations for aquifer protection that may be based on model land use regulations developed by Connecticut's Department of Energy and Environmental Protection.

Inland surface waters rated good to excellent in quality may be used for drinking water supplies. Other coastal and inland surface waters are adequate quality for fishing and swimming but may contain discharge areas for treated wastewater.

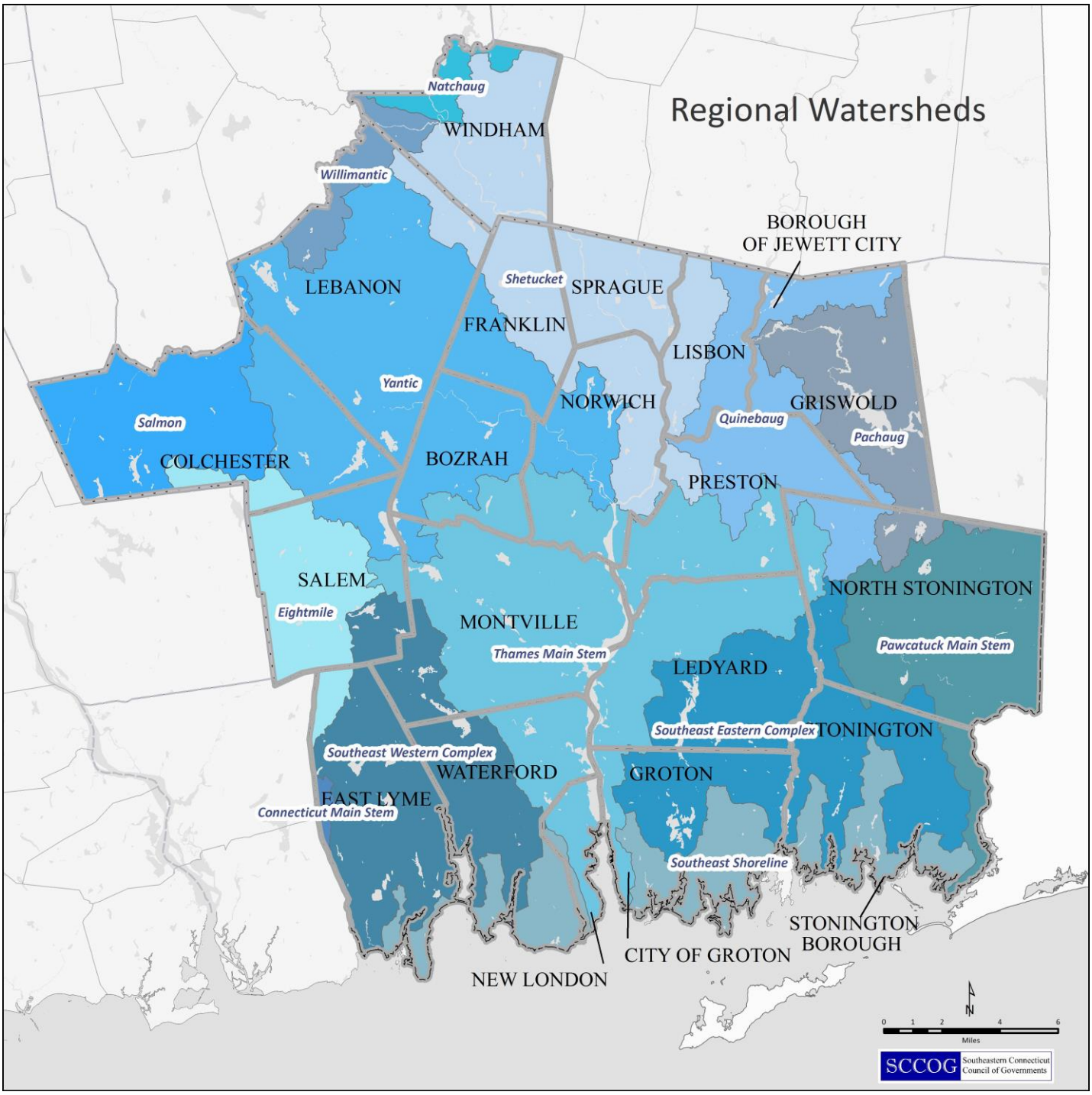


Figure 89. Watersheds.
Source: Connecticut DEEP.

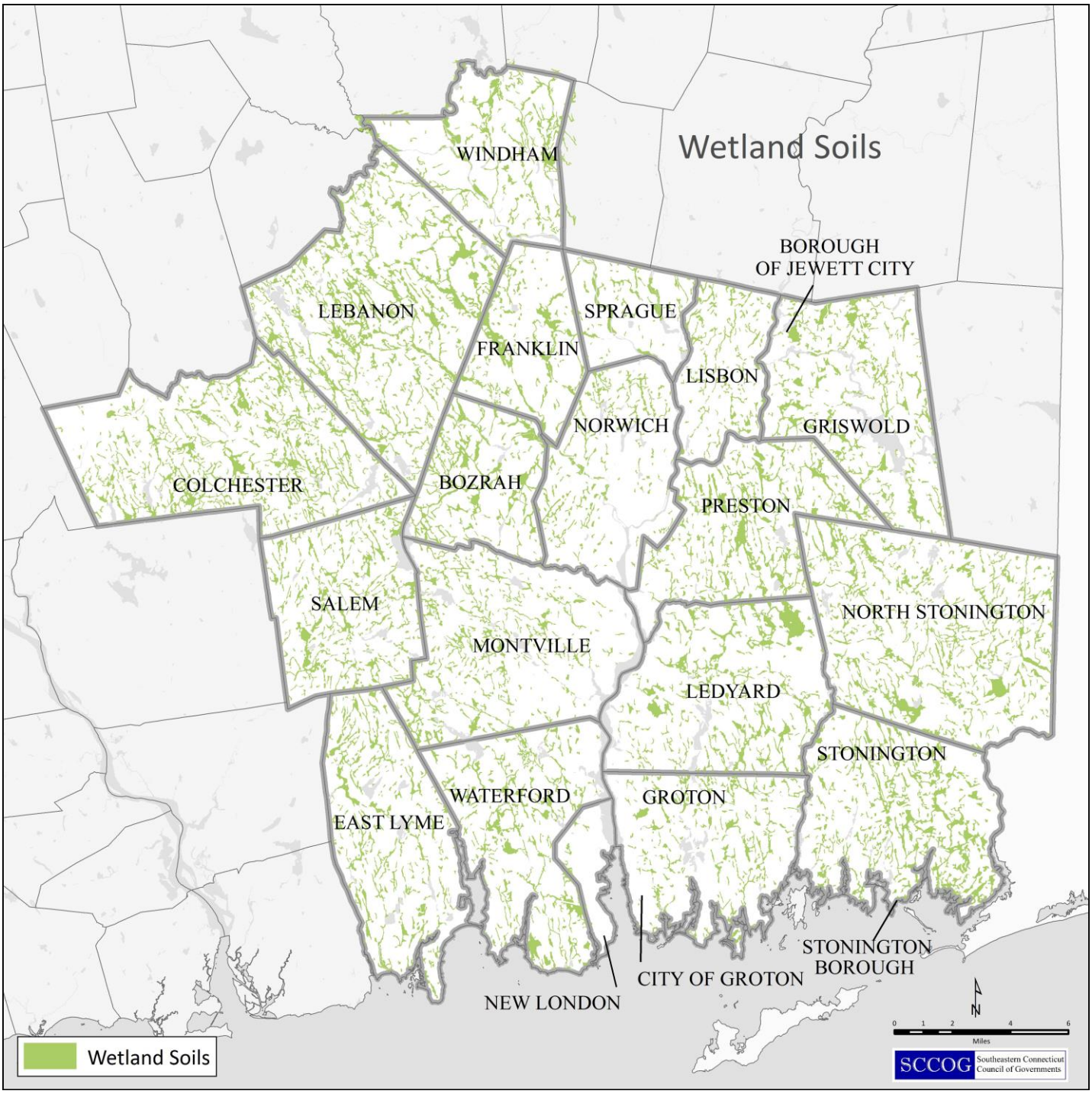


Figure 90. Wetland Soils.
Source: Connecticut DEEP.

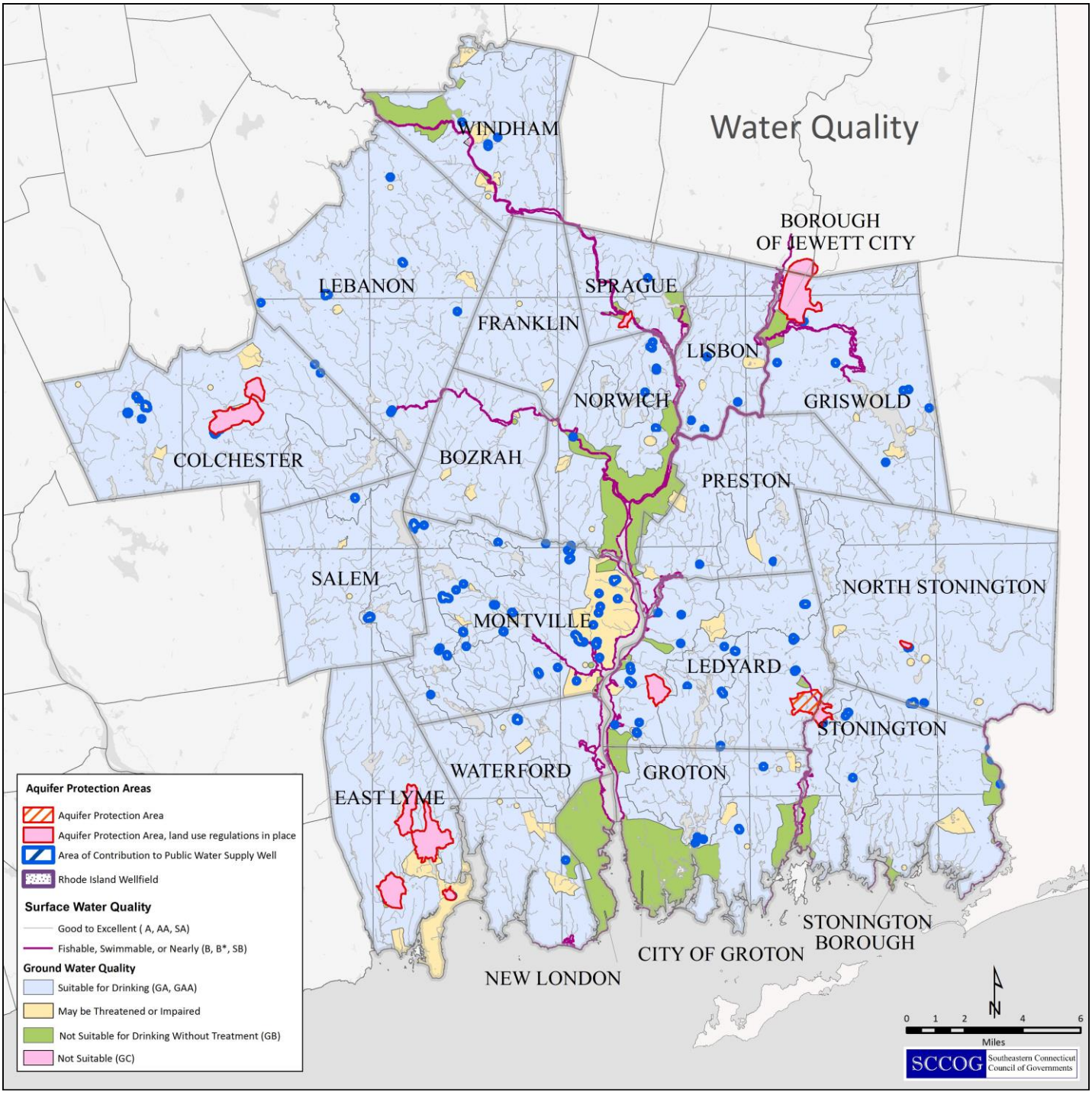


Figure 91. Aquifer Protection Areas and Water Quality.
Source: Connecticut DEEP. Data current as of August 2015.

RESILIENCE



Mystic in 1879; Ocean Beach, New London before the 1938 Hurricane; Hempstead Street in New London after the 1938 Hurricane. Sources: University of Connecticut Libraries Maps and Geographic Information Server, Mystic Seaport Archive accession number 1998.97.2.47 via Connecticut Digital Archive, Groton Public Library.

WHAT IS RESILIENCE?

The concept of resilience is that a region can protect itself against harm from natural or man-made disasters through proactive actions and maintenance of its infrastructure and built environment. As a coastal region, southeastern Connecticut is at risk of damage from a variety of natural and man-made hazards. Natural risks include harm from flooding, hurricanes, tornadoes, heavy snow, earthquakes and wildfires. Man-made hazards may include the failure of dams, building collapses, terrorist actions or nuclear radiological emergencies. The Connecticut Department of Emergency Services and Public Protection, Division of Emergency Management and Homeland Security coordinates emergency management planning and response via five regions. SCCOG municipalities are located in Region Four, which also includes northeastern Connecticut.

What One Storm Can Do

The March 29-30, 2010 Nor'easter produced an extended period of heavy rainfall across southeastern Connecticut. A total of 8.6 inches of rainfall was reported in Mystic.

Major flooding occurred along the Quinebaug River at Jewett City, which crested 5.76 feet above flood stage. Numerous homes experienced basement flooding in Groton, Stonington, and North Stonington. Numerous roads were closed and/or washed out in Stonington and North Stonington.

The Yantic River crested at 4.23 feet above flood stage, causing major flooding in Norwich. The Connecticut Department of Transportation noted that the 0.2% annual chance flood level was reached at eight different locations in New London County.

Excerpted from 2012 Multi-Jurisdictional Hazard Mitigation Plan

Natural Hazards

Winter Storms

Connecticut will become increasingly vulnerable to major winter storms during the next 20 years due to an increasing population and its heavy dependence on motor vehicles for transportation. Connecticut's dense population and aging transportation network may result in severe gridlock during winter storms. The state is especially vulnerable to two types of winter storm: 1) rapid onset of heavy snow over urban areas, and 2) icing of roadways as a result of lighter snow events that leads to freezing of water on roadways.[26]

Hurricanes

Hurricanes have the greatest destructive potential of all natural disasters in Connecticut. Although winter storms cause more frequent coastal flooding and more annual damage, a single major hurricane (Category III or above) can cause three to ten times the amount of damage.[27]

Hurricane damage occurs in multiple ways—from flooding associated with heavy rainfall, wind damage, failure of utility infrastructure, and from storm surge. Hurricanes are ranked from 1 to 5 according to their wind speed. A moderate Category 2 hurricane can be expected to make landfall in Connecticut once every ten years. Based on the past frequency and intensity of hurricanes in the twentieth century, at least one major hurricane of Category 3 or 4 may occur before 2040. The most devastating hurricane to strike Connecticut in recorded history was the so-called "Long Island Express" hurricane of 1938, which caused devastating flooding and building damage as well as catastrophic fires in New London and Mystic. The type of damage from a hurricane can be difficult to predict. In 2012, Hurricane Sandy caused damage in Connecticut primarily from its storm surge, while Hurricane Irene, one year earlier, caused most of its damage in interior riverine communities.

According to estimates produced by the U.S. Bureau of Labor Statistics, about 1,100 jobs in New London County are in locations at risk of storm surge inundation from a Category 1 storm, and that number increases to 5,400 for Category 2, and over 8,000 for a Category 4 storm (7% of all jobs in the county).[28] A Category 2 storm could flood up to 5% of New London County's homes.[29]

[26] DEMHS Region Four Regional Emergency Support Plan, 2009.

[27] DEMHS Region 4 Regional All Hazards Risk Assessment, 2009.

[28] U.S. Bureau of Labor Statistics, Employment in Hurricane Storm Surge Flood Zones, Third Quarter 2012.

[29] SCCOG 2012 Multi-Jurisdictional Hazard Mitigation Plan, HAZUS Hurricane Scenarios

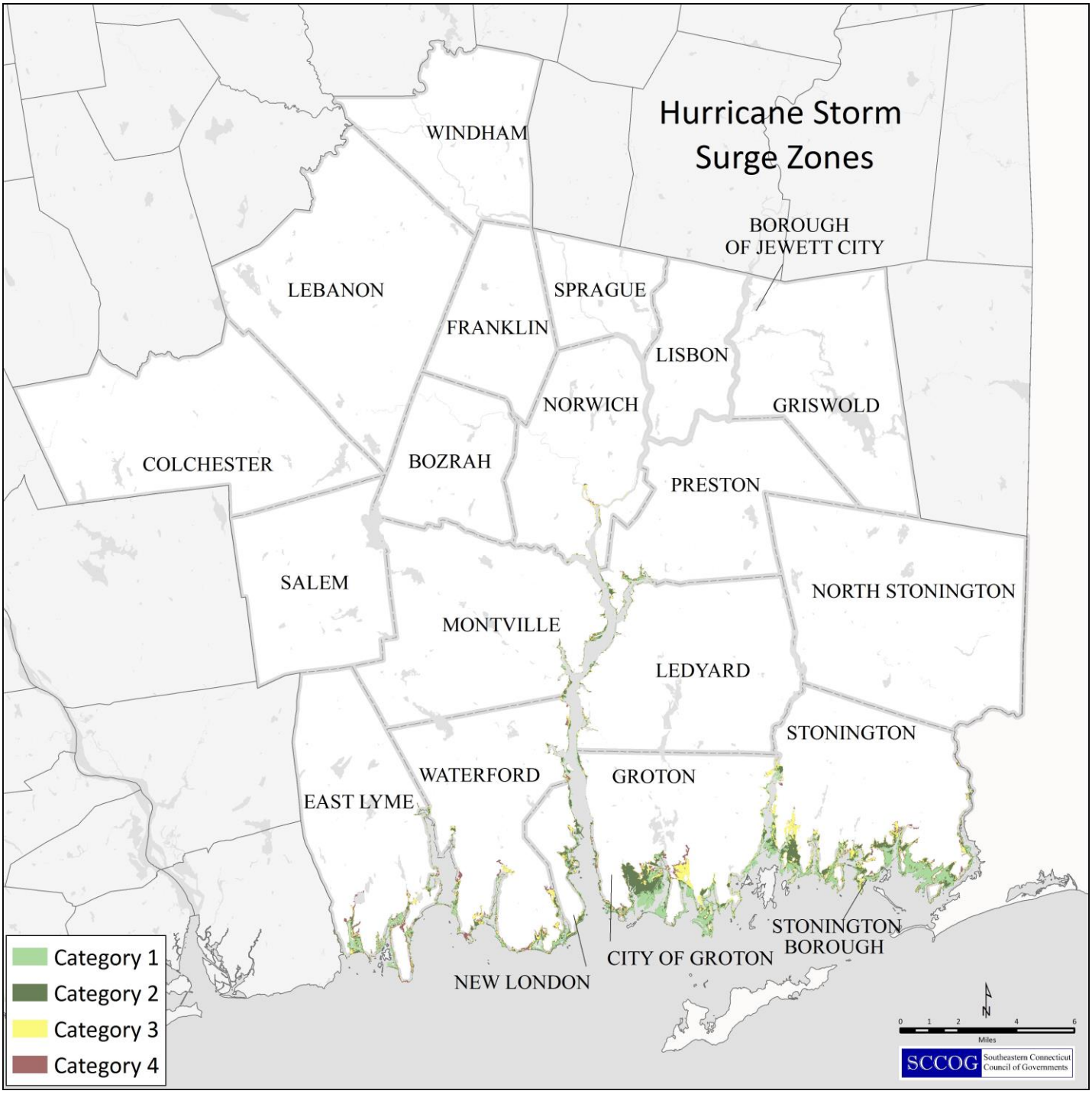


Figure 92. Hurricane Storm Surge Zones and Evacuation Zones.
Sources: U.S. Army Corps of Engineers Worst Case Hurricane Surge Inundation for Connecticut, 2008.State of Connecticut Hurricane Evacuation Map Viewer, 2014.

Flooding

Flooding is the most common and costly natural hazard in Connecticut, associated with other natural hazards such as hurricanes, winter nor'easters, summer storms, ice jams, and spring snowmelt.

Region-wide, more than 4,800 properties are located within the area identified by the Federal Emergency Management Agency (FEMA) as being at risk from a storm with a 1% annual chance of occurring each year, as of 2012 when SCCOG's Multi-Jurisdictional Hazard Mitigation Plan was last updated (Table 14, Figure 93).

Almost 3,900 property owners in southeastern Connecticut insure their properties against damage from flooding through the National Flood Insurance Program.[30] Discounts on flood insurance of 5% or greater are available for properties in East Lyme because the municipality participates in the National Flood Insurance Program Community Rating System (CRS). The region's Multi-Jurisdictional Hazard Mitigation Plan, last updated in 2012, identifies critical facilities that are located in flood hazard areas, including the Griswold Firehouse, Mystic Fire Station, and Mystic Train Station. Additional facilities that should receive special attention in flood zones include health care and senior living facilities. Southeastern Connecticut Council of Governments has recently been awarded several grants to address flooding risks, including funding from the Connecticut Institute for Resiliency and Climate Adaptation to reduce risks to critical facilities, funding from the State of Connecticut to expand municipal participation in the Community Rating System insurance discount program, and funding from FEMA to update the Multi-jurisdictional Hazard Mitigation Plan.

Municipality	Structures in 1% Floodplain	Regional Share
Stonington, Town	1,381	28%
Groton, Town	1,043	21%
Norwich	389	8%
East Lyme	358	7%
Waterford	310	6%
Stonington Borough	291	6%
New London	256	5%
Groton, City	205	4%
Ledyard	115	2%
Griswold	103	2%
Montville	96	2%
North Stonington	78	2%
Sprague	59	1%
Preston	50	1%
Lisbon	49	1%
Colchester	42	<1%
Bozrah	13	<1%
Franklin	13	<1%
Salem	7	<1%
Region	4,858	

Table 14. Structures within 1% Floodplain,
Source: SCCOG Multi-Jurisdictional Hazard Mitigation Plan Update, 2012. Lebanon and Windham were not included in the SCCOG Region at the time of the Plan's preparation.

[30] FEMA National Flood Insurance Program Statistics, February 2016.

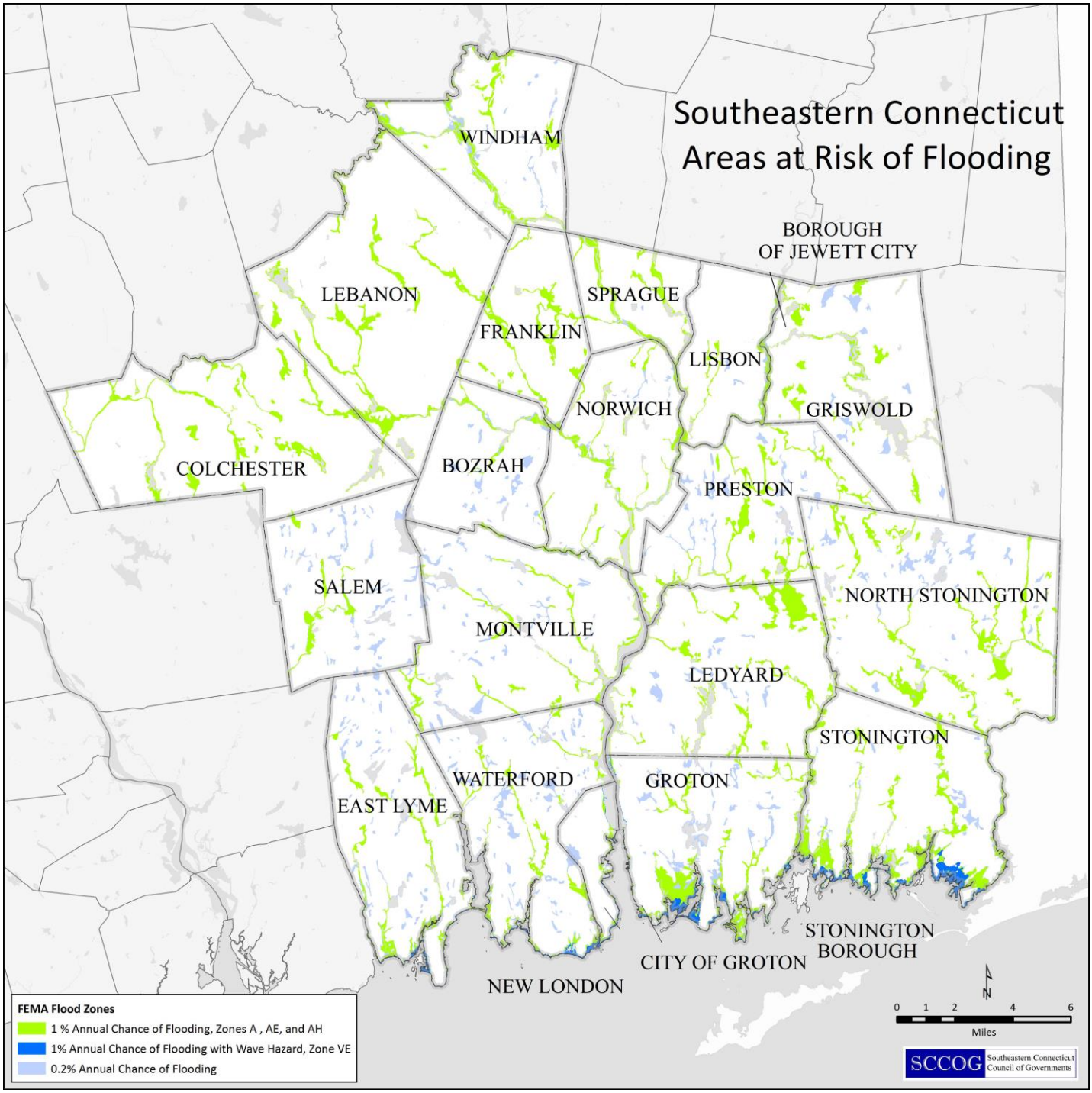


Figure 93. Flood Zones.
Source: FEMA via CT DEEP.

Wind Damage

If a storm such as the 1938 “Long Island Express“ hurricane were to occur today, it would cause wind damage to up to 45,000 homes across southeastern Connecticut, with the highest winds along the shore in Groton and Stonington. The inland effects of future hurricanes will be significant for several reasons. Although Connecticut adopted building codes in the early 1990s that strengthen resistance to extreme winds, these changes affect only new construction or renovations. Most of the existing housing stock in Connecticut was built before 1990 and is unaffected by the code changes. Because much of the existing housing stock predates the code improvements, it is highly susceptible to roof and window damage from high winds.

Neighborhood of beach cottages at Bluff Point (Groton) in the aftermath of the 1938 Hurricane.
Source: Groton Public Library.

Climate Change and Rising Sea Level

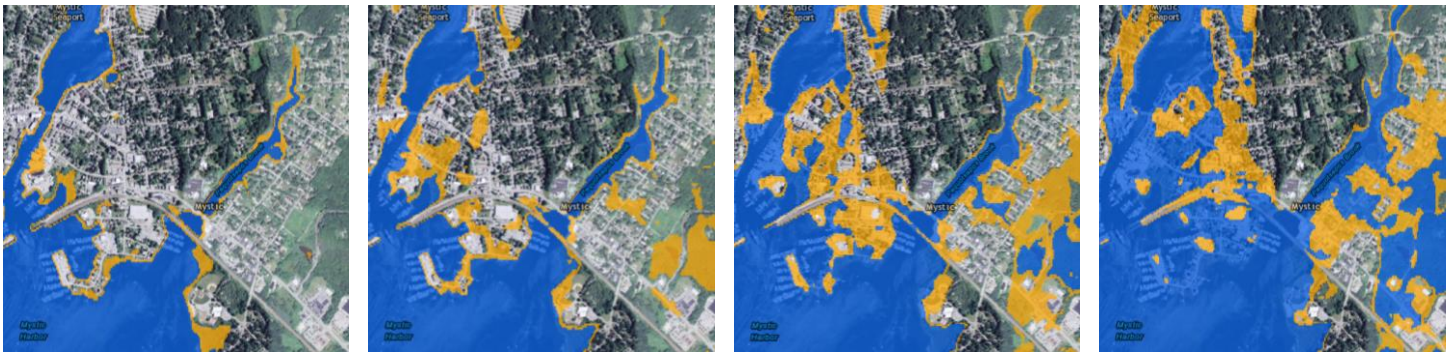


Figure 94. Potential Impacts from Sea Level Rise: Downtown Mystic at highest tide levels now, and with 2, 4, and 6 feet sea level rise.
Areas with a high confidence of being inundated at high tide are shown in blue, low-confidence in orange.
Source: NOAA Sea Level Rise and Coastal Flooding Impacts Viewer.

As a coastal region, southeastern Connecticut should be particularly aware of changing threats due to projected shifts in climate, weather events, and sea level rise. Climate change will place more of the region's homes and businesses at risk for flooding and hurricane damage, increase the frequency and /or severity of both summer and winter storms, and modify the coastline as sea levels rise. The Governor's Steering Committee on Climate Change produced a report in 2010 documenting the expected impacts of climate change in Connecticut, including:

- Negative impacts to agriculture, especially shellfish, maple syrup, and dairy
- Negative impacts to infrastructure, including coastal flood control systems, transportation, and facilities
- Negative impacts to natural environments, especially ecosystems along or linked to the ocean. This would change rare habitat types and stress or eliminate species dependent on select habitats
- Negative impacts to public health from extreme heat, air quality, and infectious disease.

Rising Sea Levels

The Connecticut General Statutes now requires that municipalities consider predictions of changes in sea level as part of local plans of conservation and development. The National Oceanographic and Atmospheric Administration's 2012 report "Global Sea Level Rise Scenarios for the United States National Climate Assessment" states that scientists have a very high confidence that sea levels will rise by at least eight inches by the year 2100 and potentially as much as 6.6 feet (2.2. meters). The greatest uncertainty in predicting future sea level rise is in the rate of glacial melting in Greenland and Antarctica. Recent research has projected faster melting of the Antarctic ice sheet, raising sea levels by three feet by 2100 and six feet by 2200.[31] Figure 94 shows the range of potential impacts from these levels of sea level rise in downtown Mystic, one of southeastern Connecticut's most vulnerable communities.

Southeastern Connecticut's coastal towns lie almost entirely in the region of Connecticut called the "Coastal

[31] DeConto & Pollard, "Contribution of Antarctica to Past & Future Sea-Level Rise," *Nature*, April 2016.

Slope," a zone that begins approximately 12 miles inland of the coastline. In this zone, the slope of hilltop elevation decreases at about 50 feet per mile, about twice the slope of zones further inland. Risk mapping suggests that most of the region's inhabited areas are at low additional risk of flooding due to projected sea level rise (exceptions noted below), unlike far more vulnerable communities in Long Island or New Jersey where entire towns exist on low-lying barrier islands. Risk mapping likewise suggests that due to the region's topography, only a few inhabited areas will face new exposure to hurricane storm surges due to projected sea level rise.

Within southeastern Connecticut, low-lying neighborhoods exist in Stonington Borough, Mystic, Groton Long Point, and downtown New London. Groton-New London Airport is also at risk from inundation by rising seas and storm surge. Areas with already poor drainage will experience additional flooding as drainage systems become less effective. As sea level rises, these areas will likely continue to experience decreased drainage capacity and increased flooding. The region's natural coastal environments may also see dramatic changes, particularly in marshy areas where small changes in water levels alter ecosystem function.

Changes to Storm Frequency and Intensity

Beyond the risks of sea level rise due to climate change are anticipated changes in the frequencies and intensities of storms. The International Panel on Climate Change projects that Atlantic Ocean hurricanes will be more intense in the future, increasing the likelihood of damage.[32] The Union of Concerned Scientists' 2007 synthesis report, Northeast Climate Impacts Assessment, suggests that coastal Connecticut may see an increase in the number of winter storms, especially late in the winter. Flooding events will also become more frequent. By 2050, flooding that would occur once every 100 years in New London may recur every 56 to 60 years.

Planning for Manmade Disasters

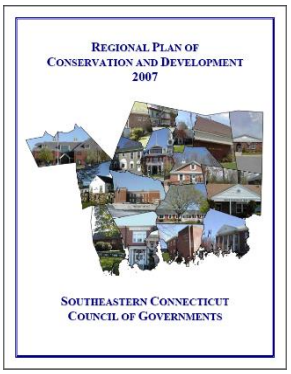
Connecticut's Division of Emergency Management and Homeland Security plans for a variety of potential manmade disasters, many of which are not location-specific, including the following: building collapse, explosion, carbon monoxide poisoning, chemical spills, terrorism, disruption of critical infrastructure, and disease epidemics.

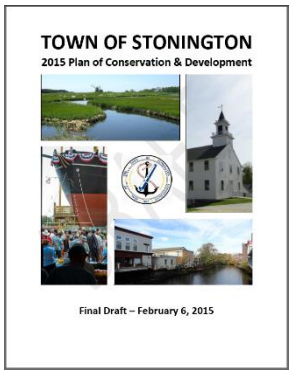
Millstone Nuclear Plant

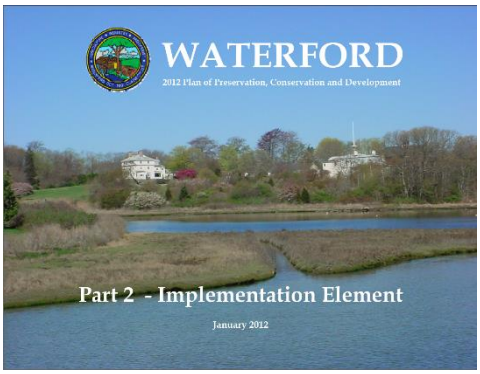
The presence of a nuclear energy plant in Waterford requires additional and specific emergency planning. Contrary to some popular beliefs, a severe nuclear power plant emergency would most likely not be a sudden event but would probably take hours or days to develop. Emergency sirens are located within a 10-mile Emergency Planning Zone surrounding Millstone Nuclear Plant in Waterford. Shelter communities outside the 10-mile zone have been designated to assist residents if evacuation is ordered.

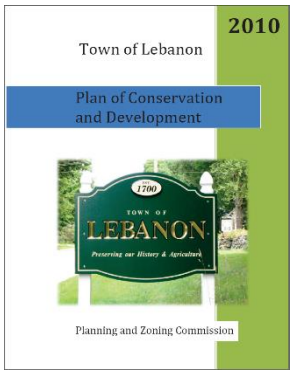
[32] "Climate Change Primer- Sea Level Rise in Connecticut." State of Connecticut Department of Energy and Environmental Protection.

Previous Regional and Municipal Plans









Types of Plans

State, regional and municipal plans function to establish policies, direct the development of supporting regulations, and help to establish funding priorities. Both municipalities and regional councils of government are required to prepare plans of conservation and development every ten years.

State Plan of Conservation and Development

Connecticut General Statutes section 16a-24-30 require that the State adopt a Plan of Conservation and Development that establishes policies related to state needs for infrastructure, housing, economic and community development; risks associated with natural hazards, erosion, and sea level rise; and the protection of water quality and open space. The current State Plan was adopted in 2013 and identifies "Priority Funding Areas." State projects and projects funded with state funding must be consistent with the State Plan. Other state planning documents must consider the State Plan and note any inconsistencies with its policies.

Regional Plan of Conservation and Development

The Regional Plan of Conservation and Development is adopted by a majority vote of the members of the region's Council of Governments. Its primary function is to "promote with the greatest efficiency and economy the coordinated development of its area of operation and the general welfare and prosperity of its people" (Connecticut General Statute 8-35a). The Regional Plan helps to guide actions of the Council of Governments that include prioritizing the use of federal transportation dollars locally and administering inter-municipal partnerships. SCCOG adopted its last Regional Plan in 2007.

Councils of Governments review and comment on local municipal actions that may impact nearby municipalities, specifically when municipalities are considering the adoption of a new municipal plan of conservation and development, zone changes that will affect property within 500 feet of a municipal boundary, or subdivisions that abut or cross municipal boundaries. The Regional Plan of Conservation and Development provides a framework by which a council of governments can evaluate whether local actions are consistent with regional goals. Prior to final approval, a Regional Plan of Conservation and Development must be submitted to Connecticut's Office of Policy and Management for review and comment. The State review identifies where

the Regional Plan may be inconsistent with the State Plan of Conservation and Development.

Comprehensive Economic Development Strategy

The Southeastern Connecticut Enterprise Region (seCTer) is a public-private regional economic development agency serving the 22-municipality southeastern Connecticut region. seCTer is responsible for creating a Comprehensive Economic Development Strategy (CEDS) every five years. The CEDS establishes a strategy-driven plan for regional economic development and is a prerequisite for the region to be eligible for funding from the U.S. Economic Development Administration under its Public Works and Economic Adjustment Assistance programs.

The current CEDS was developed in 2011 and updated in 2014, and a 2017 CEDS is currently in development. The Comprehensive Economic Development Strategy is adopted by seCTer's Board of Directors, which includes representatives of the region's municipalities, businesses, and civic organizations, and is also endorsed by the SCCOG.

Municipal Plans of Conservation and Development

The municipal Plan of Conservation and Development functions as "a statement of policies, goals and standards for the physical and economic development of the municipality… designed to promote the coordinated development of the municipality and the general welfare and prosperity of its people" (Connecticut General Statutes 8-23). State statute outlines a series of issues which the municipal plan must consider, including affordable housing, water quality, transportation, energy-efficiency, infrastructure capacity, projected sea level change, preservation of agriculture, and state and regional plans. The plan must provide for a system of transportation and recommend the most desirable uses of land, while noting any inconsistencies with state growth management principles.

Final approval of the municipal plan lies with the planning or planning and zoning commission. Prior to adoption, a municipal Plan of Conservation and Development must be forwarded to the Regional Council of Governments for review and comment as to whether the plan is in alignment with the regional plan, municipal plans of neighboring communities, and the State Plan of Conservation and Development. The municipal plan is also submitted for review by the municipality's legislative body (e.g. city council, board of selectman). Municipal plans are implemented through complementary regulations, including zoning, subdivision, or wetlands requirements; by the assignment of staff resources to needs identified in the plan; and through the allocation of resources. Many recent municipal plans include an implementation element, which identifies the relevant institutions, agencies, commissions, and private entities that play primary or supporting roles in implementing strategies.

Recommendations of Previous Plans

What follows is a review of how the Southeastern Connecticut Council of Governments and its member cities, towns, and boroughs have addressed conservation and development within previous planning documents.

Economy

Municipalities influence economic activity within their boundaries by regulating the location of commercial properties. Commercial zoning regulations influence amenities available to local residents, community aesthetics, and the availability of local jobs, and play an outsized role in generating tax revenue to support the municipal budget. Zoning regulations can encourage businesses to locate or expand in a town or prevent them from conducting unwanted activities that would harm quality of life.

Recommended Municipal Actions (numbers in parentheses show frequency of inclusion):

Diversify downtowns and neighborhood centers

Many of the region's towns emphasize the goal of concentrating development and redevelopment in existing downtowns, neighborhood centers and villages, either exclusively or in addition to other economic development areas, recognizing the roles of supportive roadway infrastructure or potential competition from other development zones. Several towns are also proposing or considering the development of new mixed-use town center nodes where none currently exist (16). Plans discuss the potential adoption of planned village district regulations or architectural design guideline to regulate development within village centers (10).

Continue/expand industrial uses

Towns with existing business parks are looking to continue their use or expand uses within them to non-industrial activities. Two communities are considering the development of additional industrial business parks (10).

> *"The Town of Montville has made a concerted effort over the past twenty years to diversify its industry clusters. This has been accomplished by extending utilities in designated areas, targeting the tourism hotel cluster, attracting age restricted housing projects, revisions to the Zoning Regulations and re-zoning to accommodate commercial growth. This strategy has resulted in adding six new entities to the top twenty taxpayer list."*
>
> 2010 Montville Plan of Conservation and Development, pg. 103.

Support tourism

Tourism is an economic driver in several of the region's coastal communities. Towns identified the need to improve signage and aesthetics to cater to visitors from out of town and to market their communities as part of a regional strategy (5).

Promote development at highway junctions

Several towns identified opportunities for commercial development in areas near highway junctions or identified the potential for more intense commercial uses along existing commercial corridors (4).

Regional Planning:

Diversifying the economy has been the primary economic goal identified in southeastern Connecticut's Regional Plans of Conservation and Development since the agency began preparing them in the 1960s. Most recently, the 2007 Plan recommended that municipalities work together to create and promote multi-municipal economic development regions, and that development should be concentrated in mixed-use centers served by transit.

The most recent Comprehensive Economic Development Strategy (CEDS), completed by the Southeastern Connecticut Enterprise Region (seCTer) and co-adopted

by the SCCOG in 2011, likewise emphasized the need to diversify the economy. CEDS recommendations included the following:

- *Support new development and entrepreneurship with economic gardening and incubator programs*
- *Support regional manufacturing*
- *Ensure continued strength of defense-related activities*
- *Support the growth of tourism, maritime, and arts & culture industries*
- *Support the growth of agricultural businesses.*

seCTer's plan identified the need to enhance supportive infrastructure, such as transit services, wastewater systems and broadband connections and to support job training programs that cultivate careers and attract and keep workers within the region. Lastly, the CEDS recognized quality of life as an important factor in attracting and keeping businesses and a skilled workforce. Quality-of-life concerns identified in the CEDS included enhancing the region's downtowns as places to live and work, supporting human services to at-risk populations, promoting water quality and water-related recreation, and promoting sustainable land use policies. seCTer is currently preparing a 2017 CEDS which may include additional goals and implementation actions.

Housing

Connecticut General Statute §8-23 requires that all municipal Plans of Conservation and Development make provisions for housing opportunities for residents of the municipality and planning region in which the municipality is located by promoting housing choice and economic diversity in housing. The municipalities of the SCCOG region have identified growing needs for affordability as well as for housing suited to special needs.

Recommended Municipal Actions (frequency of inclusion):

Promote the development of senior housing and services: Municipalities are recognizing that their existing baby boomer residents are aging into a phase of life with different housing needs. These communities propose anticipating these needs and promoting the construction of housing appropriate for elderly residents as well as expanding services to residents aging in place (13).

Expand housing options for all ages: Many, but not all, communities would like to expand the variety of housing available, promoting multifamily and mixed-use development, especially in village areas or along commercial corridors (11).

Promote affordability: Suburban and rural communities are interested in encouraging the development of affordable housing in their communities through requirements for affordable set-asides or incentives for affordable deed restrictions (10).

Support maintenance: The maintenance and rehabilitation of existing homes is a concern for at least three communities who proposes the creation of or continuation of low-interest loans for homeowners, tax incentives or stronger code enforcement (3).

Promote residential conversions: Several towns see opportunities to convert unused commercial or civic space to residential units in vacant buildings, unused upper floors of commercial properties, mills, and in oversized single-family homes (3).

Regional Planning:

In 2002, the Southeastern Connecticut Council of Governments conducted a detailed study of housing needs in southeastern Connecticut, and found that the region would need approximately 5,000 new housing units by 2005. One result of this study was the formation of the Southeastern Connecticut Housing Alliance (SECHA), an independent advocacy organization tasked with expanding access to housing options in southeastern Connecticut. SCCOG's 2007 Regional Plan of Conservation and Development recognized the ongoing need for housing choices and recommended supporting SECHA's efforts.

In 2010 the Windham Region Council of Governments, which at the time included current SCCOG members Windham and Lebanon, prepared a Regional Plan of Conservation and Development that promoted flexible land use regulations that would help expand the variety of housing choices available to residents. The 2013 Regional Plan for Sustainable Development, developed by the Eastern Connecticut Sustainable Communities Regional Planning Consortium, also recognized the need to expand utilities to desired areas for housing development.

> *"Overall, people are living longer and healthier lives and the increasing portion of the population in older age groups will affect the services communities provide… Waterford will continue to configure its community services and facilities to meet the needs of the community of the future rather than for what has been done in the past. This may include more senior housing, more social services, different types of transportation, and program activities for older residents."*
>
> 2012 Waterford Plan of Preservation, Conservation, and Development, pg. 67.

Transportation & Mobility

Municipal transportation policies established in plans of conservation and development influence municipal actions by guiding capital and operating investments in road construction and transit service; by directing how subdivision regulations and site plan design addresses the needs of drivers, transit users, cyclists, and pedestrians; and by linking transportation goals with supportive land use policies. Many of southeastern Connecticut's municipalities wish to improve conditions for pedestrians, cyclists, and transit riders, and to improve the character and function of roadways to support economic activity.

Recommended Municipal Actions (frequency of inclusion):

Build sidewalks and improve pedestrian conditions: Communities are recommending that sidewalks be constructed where they do not yet exist in downtowns and village centers, as well as requiring sidewalks or pedestrian/bicycle paths in new subdivisions (15).

Create bicycle routes: Just as SCCOG member municipalities wish to improve infrastructure for pedestrians, they are interested in developing networks of bike routes, either via on-road lanes or off-road trails (14).

Enhance transit: Most SCCOG municipalities' plans support the continuation and improvement of fixed route bus transit and "dial-a-ride" paratransit services (15). Only a few offer concrete recommendations for improvement, including expanding route coverage, improved frequency, or new facilities such as bus shelters (5). Proposals that would encourage carpooling or transit use include employer-provided transit incentives, bus shelters, and park & ride locations (5).

Improve appearance of roadways: Member municipalities are interested in maintaining and/or improving the character of local roads, through preservation of scenic roads, streetscape and gateway enhancements, and rural construction standards (7).

> *"Traffic calming is a method by which road design is altered to encourage drivers to slow down and allow pedestrians to negotiate crosswalks more easily. While all commercial areas with East Lyme require installation of traffic calming techniques, downtown Niantic has been identified as a critical area."*
>
> 2009 East Lyme Plan of Conservation and Development, pg. 229.

Coordinate parking: Parking is an issue for many SCCOG member municipalities with downtowns and village centers (9). In some cases there is enough parking but it needs to be managed better (3). Other communities propose reviewing their parking regulations to ensure that they are calibrated appropriately for different uses (5). Municipalities are also pursuing the production of additional parking in village or downtown centers (3).

Support maritime transportation: Many of SCCOG's coastal municipalities support land use that leverages access to water-based transportation (7). Priority would be given to water-dependent uses, especially marina-type uses (2).

Utilize access management: Several communities propose the use of access management techniques to reduce traffic conflicts. Access management reduces and rationalizes the number of entry and exit points to properties through greater internal connectivity (5).

Improve road connectivity: There is interest in ensuring that roadways built as components of private development contribute to an interconnected street network that makes walking and biking convenient and reduces traffic congestion (3).

Regional Planning:

Transportation planning at the regional level has, for the past several decades, emphasized the need for a balanced transportation system that meets the needs of the region's diverse users. The 2007 SCCOG Regional

Plan of Conservation and Development endorsed the following policies and projects:

- *Expand intermodal connections and alternative travel modes, including public transit.*
- *Support new funding mechanisms*
- *Support highway expansion including Route 11*
- *Expand Shoreline East service*
- *Develop tourist-focused transit services*
- *Improve use of ports and airport*
- *Create pedestrian trail system.*

The 2010 Regional Long-Range Transportation Plan re-iterated these priorities and expanded on the need for the transportation system to support the region's sustainable economic growth. The Plan identified six priority projects: three roadway capacity projects (Route 11, I-95 and the Route 2/2A/32 connections), expanding the regional bus system, increasing the frequency of commuter rail service to New London, and enhancing New London's Union Station as an intermodal transportation hub. The Plan recommended giving priority to non-automotive (transit) improvements as a means to reduce congestion and increase highway capacity. The Windham Region's 2010 Regional Plan of Conservation and Development likewise identified the need for efficient public transportation supported by areas of high-density development.

Related Activities:

Governor Malloy's 2015 thirty-year transportation plan, *Let's Go CT!*, includes $5.6 billion in transportation investment for the eastern Connecticut travel corridor, a geography which includes both New London County and Windham County as well as parts of adjacent counties. For southeastern Connecticut, the plan envisions the following:

- Expanding bus service by 25%
- Completing Route 11 and widening I-95
- Rebuilding a portion of the Gold Star Bridge connecting Groton and New London
- Constructing a Bus Rapid Transit system connecting New London and Norwich
- Deepening New London's harbor and improving State Pier
- Improving freight rail capacity
- Making improvements to passenger rail infrastructure which would permit service to Niantic, Westerly, and increase capacity for Shoreline East service.

Historic Resources

Most of the region's municipal plans identify the importance of protecting historic resources, including individual properties, districts, scenic roads, stone walls, and archaeological sites. Implementation actions include documentation (5), adopting demolition delay ordinances (2), nominating sites and districts to federal and state historic registers (2), and providing financial incentives for preservation or direct acquisition.

Utilities & Other Infrastructure

Utilities and public infrastructure are critical and complicated systems that government has the primary responsibility for regulating. The type of available infrastructure can often determine the value and potential use of private property.

Recommended Municipal Actions (frequency of inclusion):

Identify areas for public water and sewer expansion/avoidance: In order to provide efficient delivery of services and to protect water quality, towns should establish where low-density development will utilize local wells and septic systems, and areas where public water and sewers should be expanded to existing or planned high-density areas (12).

Encourage the use or generation of renewable energy: Towns have begun to address issues of using or producing renewable energy through regulations and/or the establishment of committees or task forces (6).

Look for opportunities to expand natural gas availability: Communities are interested in bringing natural gas to users especially along commercial corridors (4).

Regional Planning:

SCCOG's 2007 Regional Plan identified the need to plan for the region's future water supply and to pursue regional wastewater treatment solutions. The plan recommended that public infrastructure serve urban centers and that higher-density development be concentrated in areas where public utilities can serve it.

> *"Groton should support the extension of natural gas service to unserved areas of the town to provide a cheaper, less environmentally-damaging form of home heating in residential areas of sufficient density. Special effort should also be made to serve areas of concentrated industrial and commercial uses, along with the Water Pollution Control Facility and the Town Hall Annex Complex."*
>
> 2016 Draft Groton Plan of Conservation and Development, pg. 160.

Natural Resources/Open Space/Parks

SCCOG members' municipal plans identify the need to protect water quality, aquifers, and sensitive lands including floodplains, wetlands, and beaches. Towns recommend the use of low-impact development practices and better stormwater management to reduce runoff from non-point source polluters like cars and houses. Many of the region's towns have already established open space plans, or their plans of conservation and development identify specific properties for acquisition for open space. Funding mechanisms include purchase by private owners, transfer of development rights, or fees-in-lieu of required open space dedications.

Public access to the waterfront is identified as an under-met need and opportunity in many coastal and riverine towns, where the plans recommend requiring public access as a condition of waterfront development or the establishment of waterfront trail systems.

Regional Planning:

SCCOG's most recent Regional Plan of Conservation and Development emphasized the linkage between concentrating development in the right places with the ability to protect environmental resources. Protecting water quality and habitats as well as preventing natural hazards were stated goals of the Plan. The Windham Region Council of Governments' 2010 Regional Plan called for the use of Transfer of Development Rights programs to preserve sensitive lands while encouraging development.

"The number one priority voiced in several venues has been to protect the quality of Windham/Willimantic's drinking water, to protect the watershed areas, and to increase access by residents to our area waterways.

Residents' interest in recreational access to water for swimming, boating and fishing is strong; Windham has one of the few endangered cedar bogs left in the state; and the flood plains provide extremely attractive soil and drainage for agricultural use.

Therefore, a priority in reviewing any potential property for acquisition as part of the Town's permanent Open Space would be its proximity to water and/or its use as a buffer to protect and enhance adjacent waterways, marshes, wetlands or watersheds."

2001 Windham Open Space Plan, as included in the 2007 Windham Plan of Conservation and Development, pg. 7-8.

Agriculture

Nearly all southeastern Connecticut municipalities share the goal of maintaining existing farmland and supporting the viability of farming as an industry.

Recommended Municipal Actions (frequency of inclusion):

Purchase land and/or development rights

- Target farmland for preservation (13)
- Purchase development rights (1)
- Encourage succession plans (1)
- Prioritize purchase of farmland (4)
- Acreage goals (2)
- Bond for acquisitions (1)

Promote agricultural activities

- Create or maintain Agricultural Commission (9)
- Lease town-owned land to farmers (1)
- Convert forested land to farmland (1)
- Encourage diversification (9)
- Reduce taxes on farmland (3)
- Encourage best management practices (1)

Adjust regulations to support agricultural uses

- Expand permitted uses to include markets, wineries, worker housing, roadside stands, etc. (11)
- Amend industrial zones to allow agriculture (1)
- Support related businesses (e.g. farming supply stores, packing plants) (1)
- Maintain and develop buffers between agricultural and other uses (2)

Expand market opportunities

- New local farmer's markets (4)

> *"North Stonington's farms are central to the community. They provide good jobs for young people, food security, tax revenue with little demand on town services, wildlife habitats, and open space. They contribute to a high quality of life and provide local products year round."*
>
> 2013 North Stonington Plan of Conservation and Development, pg. 38.

- Encourage the growth of community-supported agriculture programs (2)
- Allow on-farm markets and road-side stands (1)
- Create and publicize "Farm Trails" (1)

Promote Access to Locally-Grown Food

- Establish farm-to-school programs (2)
- Create Local Food Council (1)

Support Existing and New Aquaculture

- Very few municipalities have plans that support the potential for aquaculture in their waters; exceptions are East Lyme and the Borough of Stonington

Regional Planning:

SCCOG's previous regional plans identified agriculture as an important economic activity and recommended supporting agriculture for its economic benefit and as a means to preserve open space.

Related Activities:

In 2008 and 2012, the American Farmland Trust and Connecticut Conference for Municipalities released editions of their publication "Planning for Agriculture: A Guide for Connecticut Municipalities." The report is partially funded by the Connecticut Department of Agriculture and includes an overview of municipal policies that impact the preservation and viability of agriculture, including tax policies, land use regulations, and issues affecting marketing.

Resilience

In 2013 Connecticut General Statute §8-23 was amended to require that municipal Plans of Conservation and Development consider projected changes in sea level associated with climate change. Only a handful of the region's coastal and riverine towns have addressed potential changes in storm and flooding patterns within their municipal plans, providing special attention to development regulations for properties within current or future floodplains.

Regional Planning:

SCCOG's 2005 and 2012 Multi-Jurisdictional Hazard Mitigation Plan identified actions that would reduce harm to property and life by natural and man-made hazards. Many of the recommendations in the plan relate to emergency response and communications, subjects not usually addressed within a plan of conservation and development. But other recommendations relate to land development and conservation policies and the supporting transportation system. Recommendations include:

Critical facilities: Conduct a vulnerability assessment of critical facilities to identify threats to community facilities such as schools, police departments, and hospitals. Retrofit properties with wind-proofing and water-proofing as needed.

Resilient Development: Develop a checklist for development applicants that cross references specific regulations and codes related to disaster resilience. Bury utility lines where appropriate. Regulate building in flood zones and consider requiring new buildings to build to the highest-recorded flood levels regardless of designated flood zone levels. Regulate development in wetlands and other sensitive areas.

> *"We should anticipate that Stonington will bear its share of the impact of the rising sea and the increase in severity of storm events. A municipal Coastal Resilience Task Force has been recently established to work with the Borough to identify climate-related vulnerabilities in Town and issue a Climate Change Impact Report with recommendations for possible mitigation measures. Planning for sea level rise will help minimize potential loss of life and destruction to property and also minimize the necessity of public expenditures to protect future development from such hazards."*
>
> 2015 Stonington Plan of Conservation and Development, pg. 27.

Stormwater management: Consider additional development requirements that reduce outflow of stormwater at peak periods. Encourage floodplain storage systems and elevate locally-owned roads needed for evacuation. Upgrade stormwater systems to keep up with rising sea level.

Acquire coastal and riverine lands: Acquire undeveloped land, and particularly flood-prone properties, for demolition and preservation as open space

Regional Plan Recommendations



Naval Submarine Base New London, Mystic Seaport, Norwich City Hall. Sources: U.S. Navy/Wikimedia, Charlie Kellogg/Flickr, John Phelan/Wikimedia.

The Southeastern Connecticut Council of Governments has the responsibility to develop a Plan of Conservation and Development for the region, one that responds to the needs of a region that has weathered transitions in the economy and that is more diverse than ever before. The people of southeastern Connecticut have different needs and preferences than in decades past, and the region is facing new challenges. The Regional Plan is an opportunity to shape the future through policies and programs that will create opportunities for all residents of southeastern Connecticut, protect the natural environment, and continue improving quality of life in the region.

The following questions were considered as this Regional Plan was being developed:

- What makes southeastern Connecticut unique?
- What kinds of new development and transportation projects will meet the needs of the region's current and future residents?
- How can the municipalities of the SCCOG region cooperate and collaborate in a way that leverages expertise and best serves their citizens?
- How can the Council of Governments members and staff work together to attract resources to southeastern Connecticut—both public funds and private investment?
- How can the Council of Governments, its member municipalities, and its partners build the capacity of citizens, elected officials, and staff?
- How can this new Plan be an ongoing catalyst for progress?

The following pages identify regional goals and strategies for implementation, as well as potential partners that could assist the Council of Governments and its member municipalities in implementing the Plan's recommendations. An Implementation Strategies Matrix is included as an appendix that identifies potential partners for each individual strategy.

Economy & Fiscal Health

Southeastern Connecticut's strengths include major employers which draw both skilled and unskilled workers into the region. New residents can enjoy an unmatched quality of life and opportunities for entrepreneurship. Supporting new businesses will help diversify the region's economy and improve the economic prospects of families in southeastern Connecticut. An initiative to cross-market the region's tourist attractions will support more overnight stays by tourists, increasing tourism spending on accommodations, dining, shopping, and entertainment.

Goals:

A Diverse Economy	Efficient Government	Expanded Tourism	Growing Industries
With both large and small, established and new businesses	that provides cost-effective services	that sustains a year-round tourism economy	that are committed to the region

Strategies:

Southeastern Connecticut Council of Governments

- Increase capacity of municipalities to make use of available tools such as brownfields redevelopment programs and tax increment financing.
- Review municipal and regional development goals and regulations to identify synergies or potential conflicts with major employers.
- Encourage strategic capital investments that deliver a high rate of return and are consistent with regional and state goals and priorities.
- Enable the regional provision of services and the sharing of equipment and services between municipalities.

Municipalities

- Develop reuse plans for underutilized/deteriorating properties. Adopt zoning that allows redevelopment or changes of use.
- Streamline the zoning approvals and permitting process to support investment. Develop "ready-to-go" business sites.
- Develop regulations to accommodate home-based businesses.

Partner Agencies/Organizations

- Develop small-business assistance guide. Make available in several languages for immigrant entrepreneurs.
- Support efforts to improve "sense of place" to attract and retain workforce and employers.
- Develop incubator space for several different types of industries, including technology industries related to Electric Boat.
- Continue workforce training programs in manufacturing and healthcare.
- Develop year-round tourist attractions.
- Install signage to increase awareness of region's tourism assets.
- Support efforts to link local agricultural production with local restaurants and markets.
- Develop marketing partnerships between casinos, tourism district, and other attractions.

Partners:

seCTer

Chamber of Commerce of Eastern Connecticut

CT Main Street

Eastern CT Workforce Investment Board (EWIB)

CT Department of Labor

Connecticut Department of Economic and Community Development

Connecticut Economic Resource Center (CERC)

Connecticut Economic Development Association (CEDAS)

HOUSING

Aging baby boomers and young workers moving to the region for employment will continue to shift the housing market toward rental housing and low-maintenance homes. Municipalities which calibrate their zoning to meet the new demand can accommodate the needs of existing residents while attracting newcomers and maintaining a customer based for local businesses. Existing homes and neighborhoods will require support as they are impacted by changing economic trends and natural hazards.

Goal:

Housing Variety

that includes single-family, multi-family, owner-occupied and rental housing, and that meets the needs of all residents, particularly seniors, millennials, and low-income households

Strategies:

Southeastern Connecticut Council of Governments:

- Help towns to streamline municipal permitting processes, potentially through adoption of electronic permitting systems.

Municipalities:

- Adopt regulations to allow accessory apartments in single-family homes.
- Adopt regulations to allow by-right development of multifamily and infill housing.
- Develop regulations that facilitate the subdivision of large older homes that cannot be maintained as single-family homes.
- Preserve existing "naturally occurring" affordable housing: Adopt blight ordinances, leverage resources for neighborhood and historic preservation.

Partner Agencies/Organizations:

- Publicize housing development successes.
- Prepare regional housing market analysis to identify market demand for different types of housing.
- Educate policy-makers on economic value of housing. Provide training on diversifying housing supply.

Partners:

Southeastern Connecticut Housing Alliance (SECHA)

UConn Center for Land Use Education and Research (CLEAR)

CT State Historic Preservation Office (SHPO)

TRANSPORTATION

Nowhere will new technologies be felt more quickly than in transportation, where services like in-phone GPS and Uber have already changed the way we plan and carry out travel. The region must embrace opportunities to manage the transportation network as a system, and help individuals to choose travel options that will optimize their time and money. Streets must be designed to accommodate all the types of people who use them and to complement the neighborhoods they serve.

Goals:

Transit	Complete Streets	Coordinated Transportation	Safety and Reliability
That meets the needs of the region, especially businesses, low-income workers, and aging residents	that encourages transit use, biking, and walking	that makes use of new technologies to improve mobility	that meets the future needs of the region and can withstand potential natural hazards

Strategies:

Southeastern Connecticut Council of Governments:

- Prioritize the expansion and improvement of sidewalks and bike facilities. Create bike routes connecting neighborhood centers, parks, and along or parallel to major corridors. Implement Complete Streets strategies to build safety, sense of place.
- Manage the traveler demand for limited highway or transit capacity through transportation demand management (TDM) and transportation systems management (TSM), which use techniques such as variable time-of-day pricing and traveler notification systems to encourage travel on less congested systems.
- Coordinate public and private providers of transit service (SEAT, Windham Regional Transit District, 9 Town Transit, RIPTA, Pfizer, Electric Boat, Eastern CT State University, Casinos). Produce coordinated map/schedule information where appropriate.
- Develop performance measures that will make region more competitive for funding.
- Assess new technology transportation trends as part of the transportation planning process.

Municipalities:

- Encourage higher-density residential development and employment sites along transit-served corridors/station areas.
- Manage parking: municipal parking commissions or staff to calibrate parking regulations, manage parking access.

Partner Agencies/Organizations:

- Implement bus route alignment changes as recommended in the 2015 SEAT Bus Study Cost Neutral Plan B to increase bus frequencies in highest-demand corridors. Improve bus stops with signs, shelters, and safe sidewalks. Publicize the availability of transit services and real-time scheduling information.
- Train local traffic authorities and public works officials in context-sensitive road design.
- Develop regional and local councils on aging to coordinate solutions for senior mobility.
- Pursue more frequent Shoreline East service for New London and evaluate opportunities for additional rail service locations, including commuter service to Westerly, RI.
- Continue to make the regional highway network safer and expand its capacity as recommended in the Regional Transportation Plan (e.g. Route 85, I-95).
- Develop plan to protect major transportation infrastructure from interruptions/damage by storms and sea level rise (particularly coastal Amtrak tracks).

Partners:

Connecticut Department of Transportation

Southeast Area Transit District (SEAT)

Amtrak

UTILITIES

The region's utility systems are major investments for the long-term viability of the region. They require adequate maintenance and smart decisions about when and where to expand. New stresses on our regional utility infrastructure come from more frequent storms and changing customer demands for energy and telecommunications.

Goals:

Clean and Low-Impact Infrastructure	Safe and Reliable Services
that minimizes negative impacts to neighborhoods and the natural environment	that meet the future needs of the region and can withstand potential hazards

Strategies:

Southeastern Connecticut Council of Governments:

- Support the use of small community on-site wastewater treatment systems (including by advocating for a clearer and more stream-lined state permitting process).

Municipalities:

- Evaluate the potential benefits of municipal/community microgrids and pursue where appropriate. A microgrid is a local energy grid that can disconnect and operate on its own in case of a power outage and powers vital facilities until electricity can be restored.

Partner Agencies/Organizations:

- Maintain and expand support program for municipalities responsible for surface water quality improvements under MS4 Municipal Stormwater Systems permit program.
- Identify upgrades necessary to stormwater systems due to increased frequency of flood events.
- Support the development of regional and state water plans to ensure continued availability of adequate water.
- Protect wastewater treatment, energy generation, and other sites from flooding risks.

Partners:

Connecticut Department of Energy and Environmental Protection (DEEP)

CT Department of Public Health (DPH)

Municipal and private utilities

AGRICULTURE

Southeastern Connecticut is already the largest agricultural producer in the state. The region's local farms, which produce products as diverse as dairy, grains, poultry, and shellfish, are tremendous assets to build upon at a time when consumers are seeking to reconnect with local food producers. The region must do more to support an expansion of agricultural activities and to connect producers to consumers who value local products.

Goal:

A Thriving Agricultural Industry

that provides employment and adds to the region's sense of place, while providing good stewardship of natural resources

Strategies:

Southeastern Connecticut Council of Governments:

- Develop regional agricultural council to implement strategies.
- Identify missing infrastructure needs and develop solutions (e.g. USDA-approved slaughterhouses, incubator spaces, shared processing facilities, water-adjacent aquaculture facilities, farm apprenticeships, distribution networks).

Municipalities:

- Manage surface water runoff to reduce non-point source water pollution that harms aquaculture.
- Implement changes to local ordinances that expand allowed agricultural uses.
- Support the creation of local agricultural commissions to advocate for and implement policies that promote agriculture locally.
- Include priorities for farmland preservation in municipal plans of conservation and development. Pursue the acquisition of farmland and/or agricultural easements.
- Develop regulations for renewable energy projects on agricultural lands that appropriately balance goals for preserving agriculture and promoting renewable energy.

Partner Agencies/Organizations:

- Develop agricultural tourism events and resources.

Partners:

- CT Department of Agriculture
- CT DEEP
- UConn CLEAR
- seCTer
- Southeastern Connecticut Cultural Council
- CT DECD Office of Tourism
- CT Resource Conservation and Development Area, Inc. (RC&D)

HISTORIC PRESERVATION

The region's antique homes and landscapes help to define the sense of place associated with southeastern Connecticut, but they often become victims of neglect or demolition. These properties must receive special attention and support to allow them to survive into the twenty-first century.

Goals:

Maintenance and Investment	Expanded Tourism and Economic Development
that prevents demolition by neglect and preventable damage from hazards such as storms or fire	that leverages the region's historic buildings and neighborhoods for economic growth

Strategies:

Southeastern Connecticut Council of Governments

- Identify additional neighborhoods/properties eligible for historic preservation funding and to support property resilience.

Municipalities:

- Adopt demolition delay ordinances for historic properties.
- Develop regulations that facilitate the re-use of existing historic properties that cannot be maintained with current allowed uses.

Partners:

CT State Historic Preservation Office (SHPO)

CT Trust for Historic Preservation

CT Main Street

Municipal Historic District Commissions

Open Space & Natural Resources

Southeastern Connecticut's natural resources—its beaches, rivers, forests, and fields-- set the region apart. Their value to the region can be increased even further by connecting parks and open spaces into continuous greenways and trail networks that better serve local residents, tourists, and wildlife. Keeping waters clean and habitats preserved will mean an ongoing commitment to environmental protection from the region's municipalities and private land owners.

Goals:

Connected Parkland and Open Space	Public Access to Waterfront	Clean Waters
that support recreation, wildlife, and ecological functions	along Long Island Sound, the Thames River, and other waterbodies	that are protected from contamination and overuse

Strategies:

Southeastern Connecticut Council of Governments:

- Assist member municipalities in prioritizing open space for acquisition and developing natural resource protection regulations and policies.
- Work with land trusts to preserve priority lands.

Partners:

Land Trusts

CT DEEP

UConn CLEAR

Municipalities:

- Identify priority land for conservation that would connect existing preserved open spaces to improve ecological functions.
- Create bicycle/pedestrian connections between park spaces to improve access to parks and to develop them as recreation tourism assets.
- Require public access easements for waterfront development.
- Encourage the development of clustered housing and Low Impact Development (LID) to preserve natural resources.
- Develop local capacity to comply with stormwater management regulations (MS4).

RESILIENCE

Responsible regional planning means anticipating future challenges and identifying actions that will help the region's homes and businesses, infrastructure, and natural resources to adapt to new conditions.

Goals:

Resilient Homes and Businesses	Resilient Natural Environments	Resilient Regional Infrastructure
that can withstand natural hazards with minimal recovery time	that adapt to a changing climate while maintaining natural functions	that can accommodate increased rainfall and coastal storms

Strategies:

Southeastern Connecticut Council of Governments:

- Develop data for use by region's towns that identifies areas of future risk.
- Develop plan for near- and mid-term actions to adapt to effects of climate change.

Municipalities:

- Facilitate elevation of at-risk properties by re-calibrating zoning regulation height limits.
- Discourage new development in flood prone areas.

Partners:

Connecticut Institute for Resilience and Climate Adaptation (CIRCA)

The Nature Conservancy

Local Capacity and Participation

Southeastern Connecticut is comprised of 22 municipalities, each with their own governing bodies and technical staff. Formal and informal efforts to share expertise will help municipal elected officials and staff to learn from one another's experiences. A conscious effort to involve residents in governance functions will help municipalities to anticipate and address changing community needs and priorities.

Goals:

An Informed and Engaged Public	Municipal & Regional Partnerships
that plays a role in developing and implementing local projects and policies	that support collaborations that lead to better outcomes and efficiencies

Strategies:

Southeastern Connecticut Council of Governments

- System for sharing best practices among municipal and SCCOG staff, such as quarterly brown-bag lunches or issue-based workshops.
- Share municipal best practices at Council of Governments meetings and events.

Municipalities:

- Increase diversity of residents serving on municipal regulatory commissions (by characteristics such as age, race, and income level).

Future Land Use Plan

The following Future Land Use Plan map (Figure 95) was developed after reviewing the 2007 Regional Conservation and Development Plan map, subsequent municipal plans of conservation and development, material produced for the 2010 Windham Region Land Use Plan (which at the time included Windham and Lebanon), the existing land use inventory for the region, and the regional goals and strategies identified as part of this plan. Planners from each municipality also reviewed land use categories within their respective towns.

Description of Map Categories

Rural/Low-Intensity

The rural/low intensity category indicates land planned to be developed at densities of less than one dwelling unit per acre or used for agriculture or low-intensity uses. Some of the region's smallest village centers are included in this category, such as Newent in Lisbon and Hanover in Sprague, and contain community assets such as post offices and schools but little additional concentrated development.

Suburban/Medium-Intensity

The primary use in the suburban/medium-intensity zones is moderate-density housing between 1 and 3 units per acre, which includes single-family houses as well as townhouses and apartments that leave portions of land undeveloped. These areas also include scattered-site commercial and neighborhood shopping centers (example: Flanders Four Corners in East Lyme). Many of the region's historic village centers are included in this category, such as Westchester Village in Colchester, Versailles in Sprague, and Lebanon's town center.

Urban/High-Intensity

Housing density in these areas is or is planned to be more than three homes per acre, a range of densities which includes small-lot single-family homes as well as multi-family apartments. Commercial uses include multi-story office, retail, and manufacturing sites, as well as large regional destinations such as major shopping centers (example: Crystal Mall in Waterford, Olde Mistick Village in Stonington). Some of the more densely-developed village centers and neighborhoods are located in the Urban/High Intensity zone, including Baltic (Sprague), Jewett City (Griswold), and Noank (Groton).

Urban/high-intensity neighborhoods are the most efficiently served with public transit because of the concentration of riders and destinations within a compact area. These areas are also more likely to place homes within walking or biking distance of employment, shops, and services.

Institutional/Tribal

Institutional/Tribal lands are lands that belong to federally-recognized sovereign tribal nations, federal, state, or local governments, or educational institutions. They are categorized together here because these properties have similar characteristics—they are often extremely large parcels used for many different uses, and are often owned by the same entity for multiple decades. Major properties that fall into this category include the Mohegan Tribal Reservation, which includes the Mohegan Sun casino; the Mashantucket Pequot Tribal Reservation, which includes Foxwoods Casino; Naval Submarine Base New London (in Groton); and in New London, Connecticut College and the United States Coast Guard Academy.

Recreation/Open Space/Conservation

These areas are existing or proposed for permanent conservation as parks/natural environments, agriculture or recreational use.

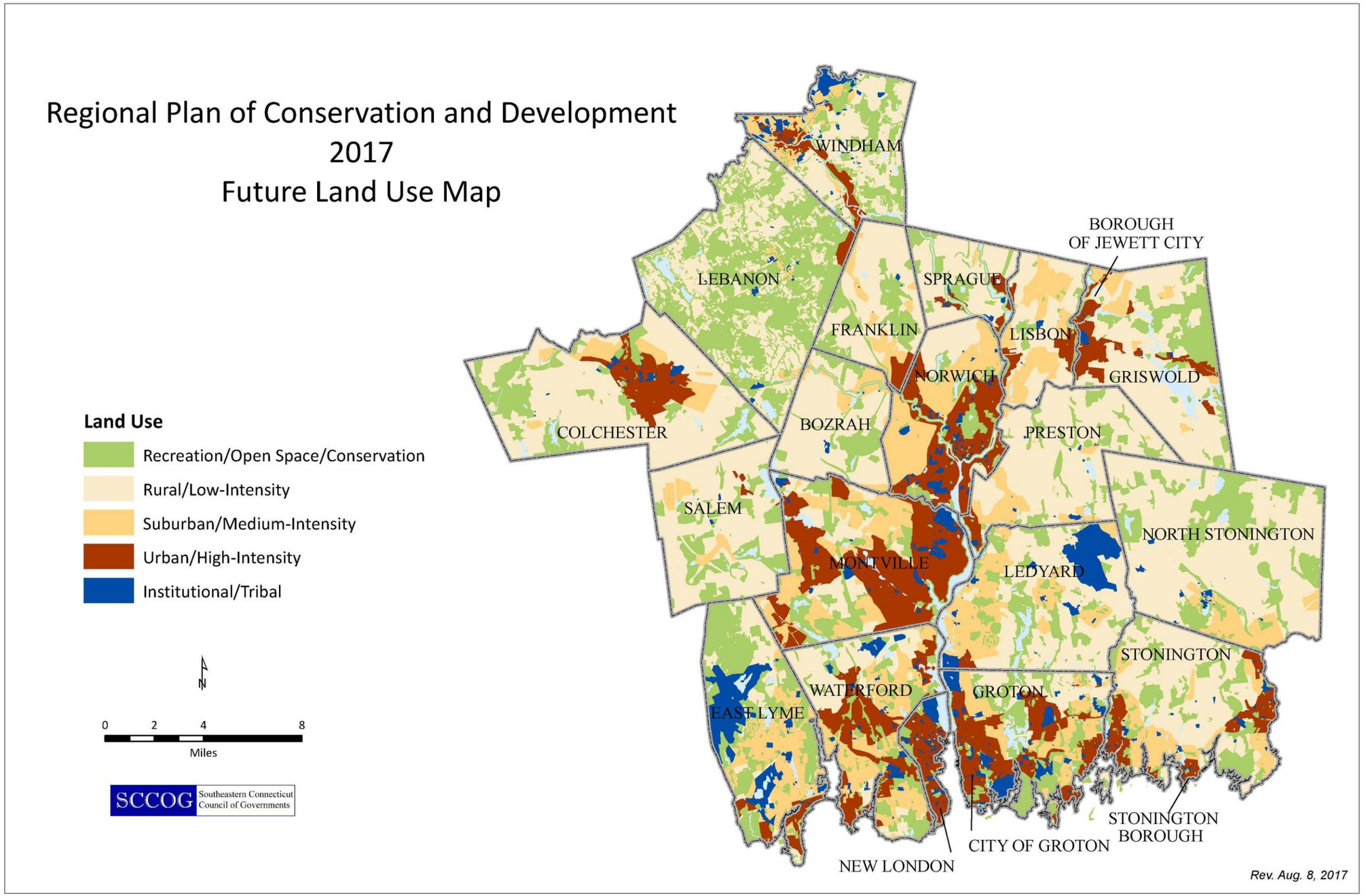


Figure 95. Future Land Use Plan Map.

Summary of Proposed Uses

The map clearly highlights areas for concentrated development along the coastline of Long Island Sound and along both sides of the Thames River. High-intensity or urban uses are proposed for 12% of the region's total land area.

Areas shown in light yellow or green are intended for low-intensity development or conservation. Proposed low-intensity development and conservation lands comprise 70% of the region's total area and 92% of the area of the region's six rural municipalities. Even within the region's four urban municipalities, low-intensity development or open space is proposed for 45% of the total area.

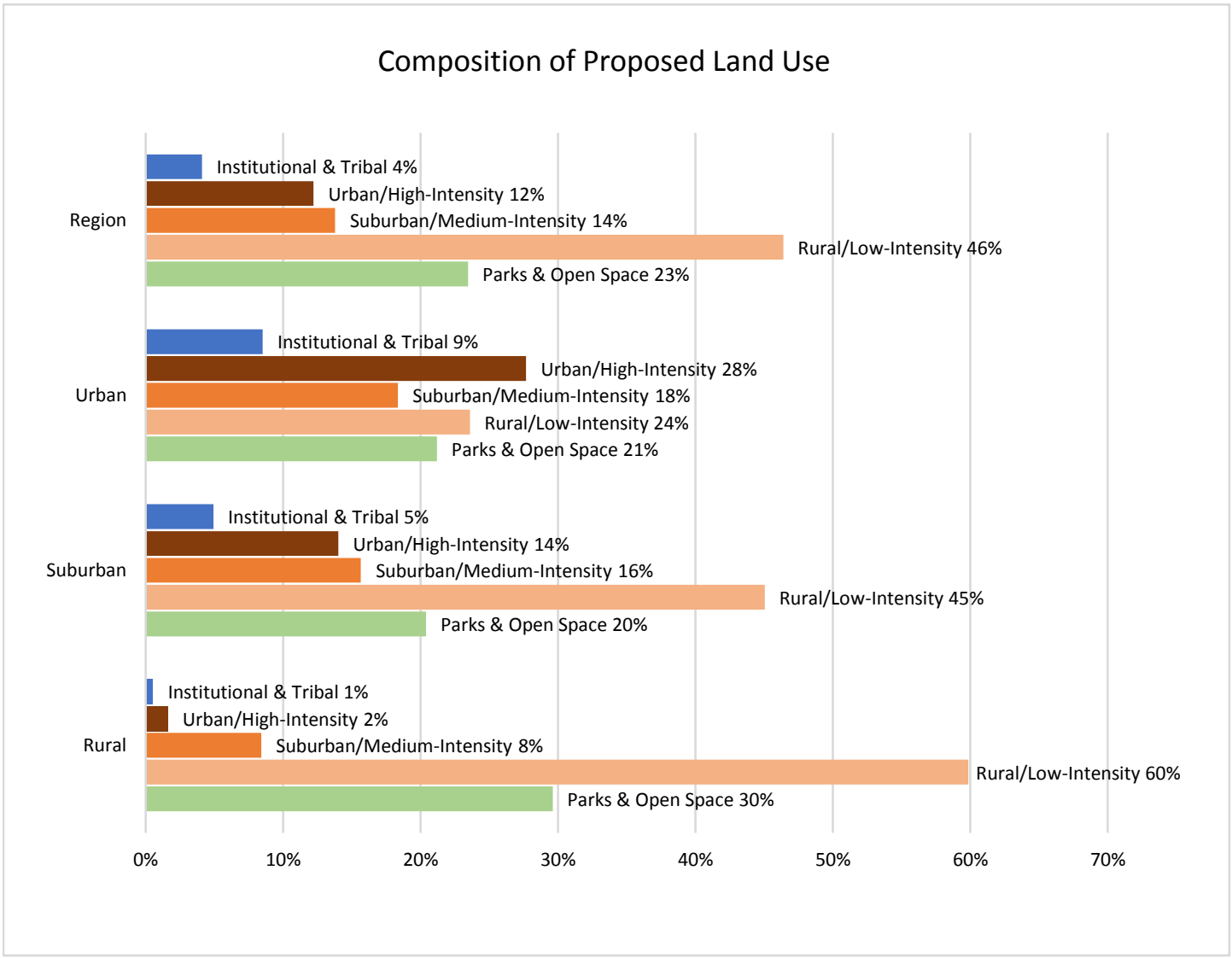


Figure 96. Proposed Land Uses.

Impact of Land Use Policies on Plan Goals

The Future Land Use Plan is intended to achieve the following objectives:

Reinforce downtowns and corridors:

Higher-intensity development is concentrated in Waterford, East Lyme, New London, Groton, Stonington, Norwich, Windham, and Colchester and in town centers, villages, and along corridors. Additional clustered housing development in these areas can help satisfy a continued need for more housing and build the consumer base for neighborhood shops and services, including transit, which will make these areas even more attractive to businesses and residents.

Isolated instances of medium- and high-intensity uses shown on the future land use map are for the most part already-developed neighborhoods and are not calls for expansion of higher-intensity development into lightly-developed areas. Homes and businesses that are located away from central corridors will be more difficult to connect with public transportation services.

Support village centers:

The region's many historic village centers range in size but all represent opportunities to build or reinforce neighborhood centers where community assets, housing, and employment, and transportation services can be clustered together. Village centers that place senior and rental housing, medical care, and shopping in close proximity will be attractive to residents seeking walkable communities.

Expand housing availability:

Demographic trends point to a need for lower-cost, lower-maintenance housing than is currently provided by the region's single-family homes, the primary housing type in many of the region's smaller towns. Municipalities should look to expand the types of housing available to existing and future residents.

Promote low-impact development and conservation:

Much of the land in the region's rural and suburban towns is in existing conservation lands or is planned for rural/low-intensity uses such as agriculture or large-lot residential development. Care should be taken in these areas to minimize negative impacts on soil and water quality and to maintain ecosystem services. There may be opportunities to expand existing conservation lands into undeveloped areas. Protecting lands that provide critical ecosystem functions or that connect or expand habitats should be prioritized. The business of agriculture should be encouraged to expand and change to meet new consumer demands.

Support existing neighborhoods and infrastructure:

The Future Land Use Plan calls for only limited expansion of sewer service areas.

CONSISTENCY WITH STATE PLANNING PRINCIPLES

State statute requires that municipal and regional plans of conservation and development "note any inconsistencies" with the six growth management principles that are the foundation of Connecticut's Conservation and Development Policies Plan, which are:

1) Redevelop and Revitalize Regional Centers and Areas with Existing or Currently Planned Physical Infrastructure;
2) Expand Housing Opportunities and Design Choices to Accommodate a Variety of Household Types and Needs;
3) Concentrate Development Around Transportation Nodes and Along Major Transportation Corridors to Support Viability of Transportation Options;
4) Conserve and Restore the Natural Environment, Cultural and Historical Resources, and Traditional Rural Lands;
5) Protect and Ensure the Integrity of Environmental Assets Critical to Public Health and Safety; and
6) Promote Integrated Planning Across all Levels of Government to Address Issues on a Statewide Regional and Local Basis.

The region's goals and recommended implementation actions in this Regional Plan of Conversation and Development are supportive of all six State growth management principles. No inconsistencies are noted.

APPENDIX: IMPLEMENTATION STRATEGIES MATRIX