

LAND USE – 2011

SOUTHEASTERN CONNECTICUT REGION

**SOUTHEASTERN CONNECTICUT COUNCIL OF GOVERNMENTS
5 CONNECTICUT AVENUE
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TABLE OF CONTENTS

	<u>Page</u>
Introduction.....	1
Overview	3
Developed Land Uses	6
Designated Open Space	11
Undeveloped Land.....	13
Summary of Growth Changes.....	16

LIST OF ILLUSTRATIONS

<u>Figure</u>	<u>Page</u>
1 Locational Map	Frontispiece
2 Land Distribution by Municipal Classification.....	3
3 Land Use by Municipal Classification.....	5
4 Developed Land Uses - All Towns	6
5 Developed Land Uses - Urban Towns	6
6 Developed Land Uses – Suburban Towns	7
7 Developed Land Uses – Rural Towns	7
8 Residential Land Use – 2011	8
9 Designated Open Space – All Towns	12
10 Designated Open Space – Urban Towns	12
11 Designated Open Space – Suburban Towns	13
12 Designated Open Space – Rural Towns.....	13
13 Generalized Land Use Map – 2011	15
14 Generalized Land Use 1980 – 2011.....	17

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Land Use Totals in Acres by Town – 2011	4

INTRODUCTION

Over the course of the past five decades, the Southeastern Connecticut Council of Governments (SCCOG) and its predecessor, the Southeastern Connecticut Regional Planning Agency (SCRPA) have been inventorying land use and land use changes in the southeastern Connecticut region. The reason for conducting these comprehensive inventories is to create an analytic tool to better understand regional development needs as they relate to land use changes at the local level. As noted in the land use inventory conducted in 2005, contained in the 2007 Regional Plan of Conservation and Development, the mechanical process of tabulating this data has evolved dramatically during this time period from the utilization of calculators, planimeters and area-graphs to the present use of a computerized geographic information system (GIS). The 2011 land use inventory represents the first time that property line data has been compiled for all SCCOG member municipalities. This inventory required the tabulation of approximately 95,000 parcels. The latest land use data is not directly comparable to past data due to significantly improved accuracies inherent in the GIS process. Even though property line data information was used in this inventory, the derived acreage totals should continue to be viewed as depicting relationships and distribution patterns of various types of land uses rather than as absolute accurate land cover totals.

The land use information presented in Table 1 list the acreage for the various land use categories described below by town. These same land use categories are shown graphically, for the southeastern Connecticut Planning Region, in Figure 13.

Low Density Residential: less than one housing unit per acre. Included in this category is a sub-category of Very Low Density Residential that includes parcels greater than five acres. A five-acre maximum lot size was assigned to these properties with the remaining area included in the Undeveloped Land category (see page 8 Residential use).

Medium to High Density Residential: one or more housing units per acre. This combined category includes medium density, consisting of parcels with one to five housing units per acre, and high density, consisting of parcels with more than five housing units per acre.

Extractive Industrial: mining, sand and gravel operations.

Intensive Industrial: manufacturing, warehousing, storage areas.

Extensive Institutional: open areas connected with intensive institutional uses. (e.g. Camp Malloy)*

Intensive Institutional: governmental and institutional buildings.*

* Institutional land use acreage was combined into one category for tabulation purposes even though governmental uses are mapped as separate categories.

Commercial: retail, wholesale, services, business and professional offices.

Mixed Urban Use: intensively developed urban areas where different land uses, such as residential and commercial, coexist on a single parcel.

Transportation, Communications, Utilities: highways, public and semi-public facilities providing services such as transportation, communications, gas, electricity and water.

Open Space: cemeteries, state forests, public-private preserves, holdings of water utilities.

Active Recreation: Public and private parks, playgrounds, camping areas, golf courses, other outdoor facilities.

Agriculture Reserves: agricultural lands protected under the Connecticut development rights purchase program.

Agriculture: other agricultural lands such as cropland, orchards, vineyards, nurseries, pastures, open fields, and dairy, poultry, swine, beef and horse farms not included as part of the agricultural reserves category.

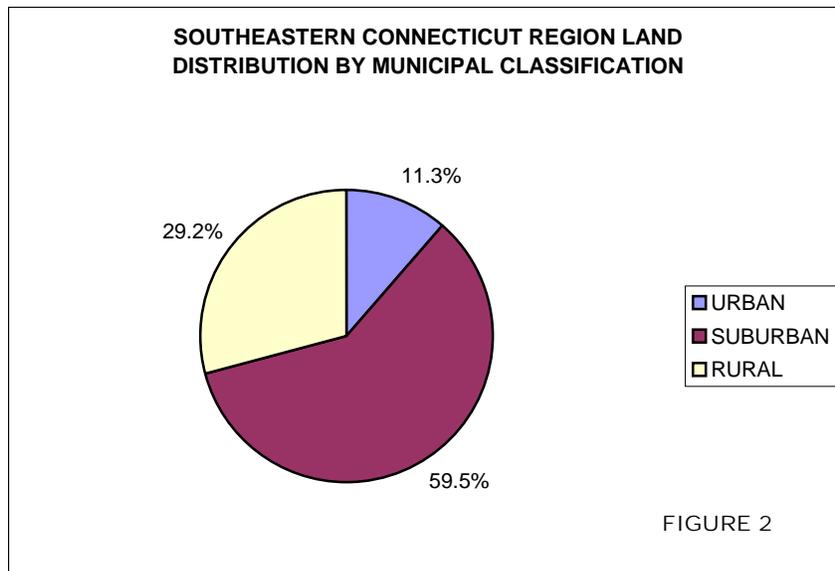
NATR: Native American Tribal Reservations.

Undeveloped: vacant and, mostly forests and wetlands.

OVERVIEW

Table 1 on the following page shows that the Southeastern Connecticut Planning Region comprises an area of 358,852 acres, or 560.7 square miles. For the purposes of this analysis, the region's 18 towns are divided into 3 density classifications: 1) Urban 2) Suburban 3) Rural. Urban towns include Groton, New London and Norwich; suburban towns include Colchester, East Lyme, Griswold, Ledyard, Lisbon, Montville, Preston, Sprague, Stonington and Waterford, while rural towns include Bozrah, Franklin, North Stonington, Salem and Voluntown.

Of the region's total land area, the urban towns account for 11.3 percent, the suburban towns 59.5 percent and the rural towns 29.2 percent. Figure 2 graphically depicts this distribution.



A significant amount of land in the southeastern Connecticut region remains undeveloped with approximately 40 percent of the regional land area in the Undeveloped Land Use category. Undeveloped land is estimated to be 142,780 acres, or 223 square miles. Developed Land, as shown in Table 1, accounts for approximately 35 percent of the region's land area representing 126,629 acres, or 197.9 square miles. The Designated Open Space category accounts for the remaining, approximately 24 percent of the region's land area, estimated to be 86,707 acres, or 135.5 square miles. It should be noted that the terms "open space" and "undeveloped land" are often confused. Open space is a special term used to describe land that can be publicly or privately owned but whose use is permanently protected in the public interest. Undeveloped land has no special protection. It is simply land that has not yet been developed.

Land Use Totals in Acres by Town, 2011
Southeastern Connecticut Region

Table 1

MUNICIPALITY	LOW AND VERY LOW DENSITY RESIDENTIAL	MEDIUM AND HIGH DENSITY RESIDENTIAL	INDUSTRIAL INTENSIVE	INDUSTRIAL EXTRACTIVE	COMMERCIAL	INSTITUTIONAL	MIXED URBAN USE	TRANSPORTATION COMMUNICATION AND UTILITY (TCU)	TOTAL DEVELOPED LAND	OPEN SPACE (W/ CEMETERIES)	ACTIVE RECREATION	AGRICULTURE (INCLUDES AGRICULTURAL RESERVES)	TOTAL DESIGNATED OPEN SPACE	NATIVE AMERICAN TRIBAL RESERVATION	UNDEVELOPED	TOTAL ACRES IN TOWN
URBAN TOWNS																
Groton	622	4,773	487	0	719	1,643	0	2,355	10,599	4,277	276	91	4,644	0	3,701	18,944
New London	83	1,136	156	0	248	507	37	728	2,895	317	107	0	424	0	178	3,497
Norwich	2,335	3,621	483	4	696	843	15	1,812	9,809	1,607	162	604	2,373	0	5,818	18,000
Urban Totals:	3,040	9,530	1,126	4	1,663	2,993	52	4,895	23,303	6,201	545	695	7,441	0	9,697	40,441
SUBURBAN TOWNS																
Colchester	9,072	1,320	145	171	819	316	45	1,784	13,672	5,341	254	735	6,330	0	10,742	30,744
East Lyme	2,756	2,814	124	0	284	4,253	0	1,188	11,419	2,483	1,132	356	3,971	0	6,947	22,337
Griswold	3,843	943	208	91	320	145	0	877	6,427	4,775	365	1,250	6,390	0	9,583	22,400
Ledyard	4,094	1,827	290	79	275	519	8	1,004	8,096	3,036	318	646	4,000	2,214	10,780	25,090
Lisbon	2,271	313	88	193	396	57	0	543	3,861	64	225	548	837	0	5,990	10,688
Montville	4,534	2,321	627	855	354	583	0	1,421	10,695	3,470	319	431	4,220	522	12,210	27,647
Preston	3,262	334	77	155	191	581	0	636	5,236	680	181	2,238	3,099	0	11,444	19,779
Sprague	1,332	229	442	0	22	130	0	318	2,473	1,023	264	289	1,576	0	4,399	8,448
Stonington	5,113	2,122	370	0	501	400	0	1,907	10,413	2,463	965	1,339	4,767	0	9,972	25,152
Waterford	3,302	2,639	341	28	806	952	0	2,289	10,357	2,310	648	66	3,024	0	7,997	21,378
Suburban Totals:	39,579	14,862	2,712	1,572	3,968	7,936	53	11,967	82,649	25,645	4,671	7,898	38,214	2,736	90,064	213,663
RURAL TOWNS																
Bozrah	1,463	151	251	11	65	118	0	456	2,515	360	738	1,195	2,293	0	7,837	12,645
Franklin	1,141	287	92	34	190	35	0	450	2,229	947	117	2,824	3,888	0	6,426	12,544
North Stonington	5,159	313	7	100	645	229	0	1,019	7,472	4,657	1,658	5,590	11,905	0	15,887	35,264
Salem	3,147	168	21	229	175	32	0	970	4,742	4,780	496	1,153	6,429	0	7,667	18,838
Voluntown	2,254	234	65	221	88	65	0	792	3,719	15,187	254	1,096	16,537	0	5,201	25,457
Rural Totals:	13,164	1,153	436	595	1,163	479	0	3,687	20,677	25,931	3,263	11,858	41,052	0	43,019	104,748
TOTAL REGION																
Total Acres:	55,783	25,545	4,274	2,171	6,794	11,408	105	20,549	126,629	57,777	8,479	20,451	86,707	2,736	142,780	358,852
Total Square Miles:	87.2	39.9	6.7	3.4	10.6	17.8	0.2	32.1	197.9	90.3	13.2	32.0	135.5	4.3	223.0	560.7
% of Total Acreage	15.0%	7.1%	1.2%	0.6%	1.9%	3.2%	0.03%	5.7%	35.3%	16.1%	2.4%	5.7%	24.2%	0.8%	39.8%	100.0%

Source: SCCOG

The breakdown of the above development categories varies widely by municipal classification. In urban towns, developed land accounts for 57.6 percent of the land area while Designated Open Space accounts for 18.4 percent and Undeveloped Land 24 percent.

In suburban towns, developed land represents 38.7 percent of the land area with Designated Open Space accounting for 18 percent. Undeveloped Land represents 42.3 percent of this municipal classification.

In the rural town classification, the percentage of developed land drops to 19.7 percent with Designated Open Space accounting for 39.2 percent and Undeveloped Land 41.1 percent. The following graph in Figure 3 depicts this categorical breakdown for the region by municipal classification.

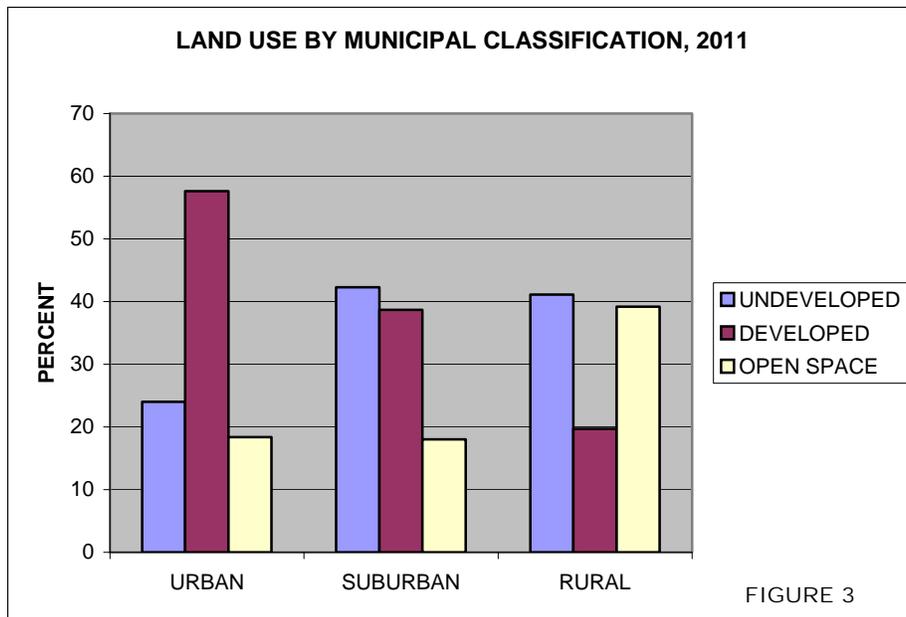
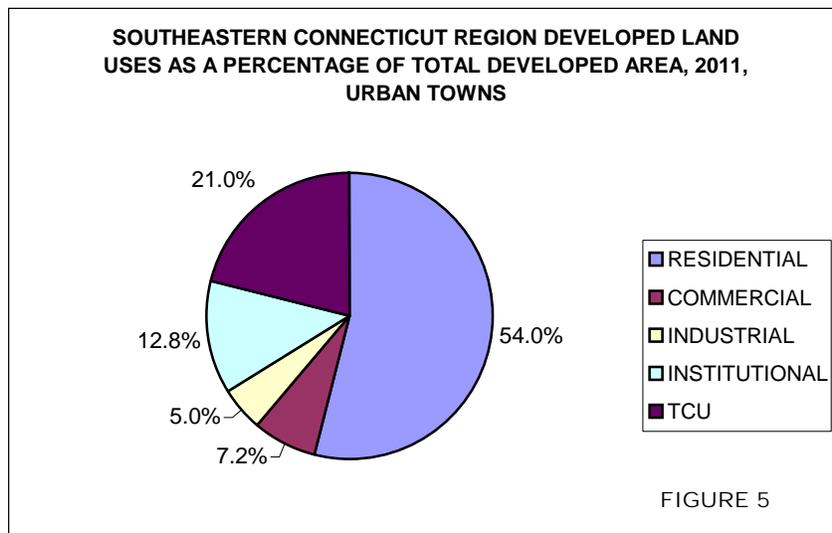
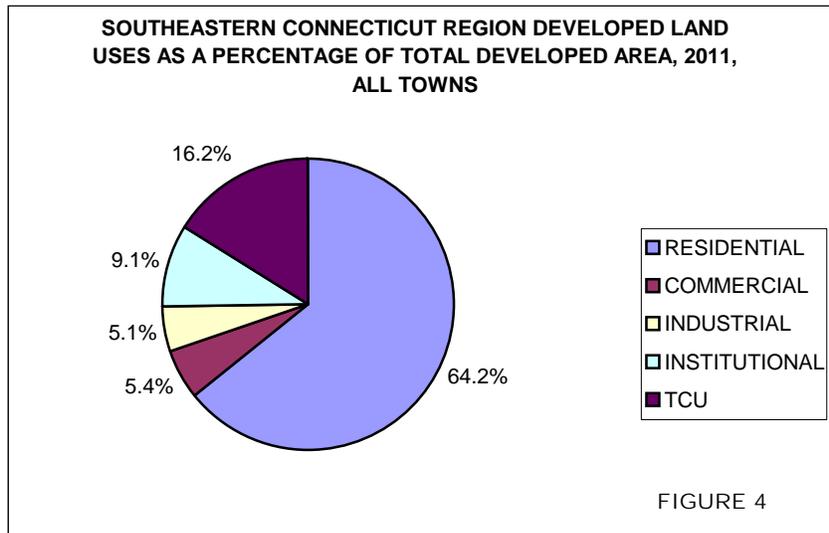


FIGURE 3
 Note: The Open Space classification includes the categories of open space, active recreation, agriculture and agricultural reserves listed on Table 1

DEVELOPED LAND USES

The developed land categories in this section are further detailed in Table 1, by town and municipal classification. The graphs shown below also depict the breakdown of developed uses in 2011 for the southeast region and by municipal classification. It should be noted that the mixed urban use category designation comprised a total of only 105 acres, or .08 percent of developed land and, as such, is not depicted in the graphs.



SOUTHEASTERN CONNECTICUT REGION DEVELOPED LAND USES AS A PERCENTAGE OF TOTAL DEVELOPED AREA, 2011, SUBURBAN TOWNS

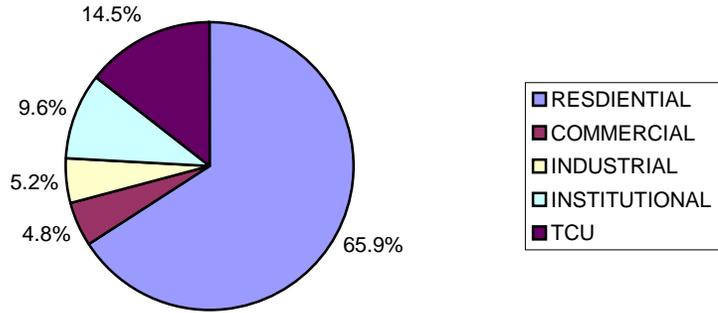


FIGURE 6

SOUTHEASTERN CONNECTICUT REGION DEVELOPED LAND USES AS A PERCENTAGE OF TOTAL DEVELOPED AREA, 2011, RURAL TOWNS

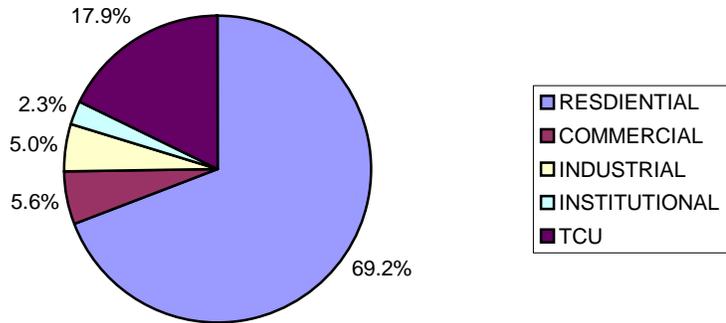


FIGURE 7

RESIDENTIAL

Residential uses continue to dominate all other land use categories in southeastern Connecticut. At the regional level, residential uses account for 64.2 percent of the total developed land, or 81,328 acres (127.1 square miles). Residential use as the largest developed land use is consistent throughout the category classification of towns. This use ranges from 54 percent for the urban towns, to 66 percent for the suburban towns, to 69 percent for the rural towns. In this inventory two categories of density were used: 1) medium-high density representing more than one housing unit per acre; 2) low-very low density representing more than one acre per housing unit. It should be noted that in this category, very low-density includes parcels up to five acres. For residential parcels greater than 5 acres, the excess portion of the parcel over 5 acres was included in the Undeveloped Land category. There were 3,588 residential parcels that exceeded the five-acre maximum. These 3,588 parcels had an area that totaled 66,468 acres. Using the five-acre maximum resulted in 17,940 acres being included in the very low-density residential category and the remaining 48,528 acres being included in the undeveloped category.

Not surprisingly, within the urban towns, the vast majority of residential land use is of a medium and high-density nature. In fact, 76 percent of the residential use in urban towns is medium and high-density. The percentage of urban land in this category is 3 times that of low-density residential use (less than one housing unit per acre) at 24 percent. Within the suburban towns, the distribution of residential densities is almost exactly the opposite of the urban towns. Medium and high-density residential use comprises 27 percent of their residential development with the remaining 73 percent low-density. Also not surprising, in rural towns, the vast majority of residential development is low density as opposed to medium and high-density. Low-density residential development is 92 percent in rural towns whereas medium and high-density residential uses are only 8 percent. Region-wide, low-density residential use comprises 68.6 percent of all residential development, with the remaining 31.4 percent in medium and high-density. Figure 8 below, graphically depicts this distribution.

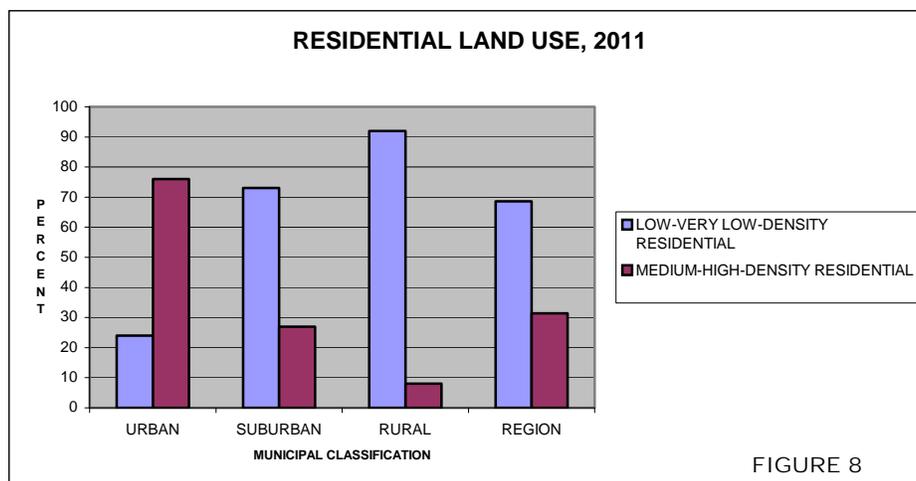


FIGURE 8

INDUSTRIAL

This category includes both extractive uses such as sand and gravel operations and intensive industrial uses such as manufacturing. Land area devoted to extractive industrial uses in the region is calculated at 2,171 acres, or 3.4 square miles. Land area devoted to intensive industrial uses in the region is calculated at 4,274 acres or 6.7 square miles. These two industrial uses combined account for approximately 5.1 percent of the total developed land at the regional level. The distribution of these combined category's, by municipal classification, as a percentage of total developed land, is as follows, Urban towns: 1,130 acres or 0.9 percent; Suburban towns: 4,284 acres or 3.4 percent; Rural towns: 1,031 acres or 0.8 percent.

Of the 2,171 acres of extractive industrial activity, 72.4 percent is located in suburban towns followed by 27.4 percent in rural towns. Not surprisingly, urban towns account for only 0.8 percent of this activity.

The largest percentage of the 4,274 acres of intensive industrial uses, at 63.5 percent, is located in suburban towns followed by the urban towns at 26.3 percent. Rural towns contain 10.2 percent of the regional intensive industrial uses.

COMMERCIAL

Commercial uses account for 5.4 percent of the developed land area at the regional level. This translates to 6,794 acres, or 10.6 square miles. The largest percentage of this commercial acreage, at 58.5 percent, or 3,968 acres, is situated in suburban towns. Urban towns contain 24.5 percent, or 1,663 acres, of the regions developed commercial acreage, while the rural towns account for the remaining 17.1 percent, or 1,163 acres.

INSTITUTIONAL

This category is the combination of Extensive Institutional open areas such as Camp Malloy in East Lyme as well as Intensive Institutional uses such as town halls and school buildings. These uses combined represent 9.1 percent of the developed land within the region and totals 11,408 acres. Urban and suburban towns contain approximately 96 percent of all institutional uses in the region. Specifically, urban towns contain 26.3 percent, or 2,993 acres of this category; suburban towns contain 69.5 percent, or 7,936 acres and rural towns 4.2 percent, or 479 acres.

TRANSPORTATION, COMMUNICATION, UTILITIES

This category includes highways, public and semi-public facilities providing services such as transportation, communications, gas, electricity and water. There are 20,549 acres, or 32.1 square miles, in this category. This area represents approximately 16.2 percent of the developed land within the region. Urban towns which comprise 11.3

percent of the total regional land area have 23.8 percent of this category. Suburban towns contain 59.5 percent of the regional land area and 58.2 percent of the developed TCU category, while rural towns contain 29.2 percent of the regional land area and 18 percent of this category.

MIXED URBAN USE

This category includes residential and non-residential uses on the same parcel. This designation is almost evenly divided between urban towns, with 52 acres, and the suburban towns, with 45 acres. It should be noted that the low acreage numbers in this category are the result of inadequate information on some land parcels in high-density areas where further research will refine and better delineate this category.

DESIGNATED OPEN SPACE

As defined in the Introduction of this study, this designation includes the special land use categories that are distinguished from undeveloped land. They are comprised of such uses as cemeteries, state forests, public-private preserves, and holdings of water utilities that are titled open space; agriculture areas, and active recreation areas. The total area of these combined Designated Open Space uses in the southeastern Connecticut Region accounts for approximately 24.2 percent of the total land area. That represents 86,707 acres, or 135.5 square miles.

The acreage breakdown of the overall category called Designated Open Space is as follows: 66.6 percent Open Space; 23.6 percent Agriculture; and, 9.8 percent Active Recreation.

Figures 9 through 12 depict the breakdown of Designated Open Space for the region and by municipal classification.

The Designated Open Space category in urban towns totals 7,441 acres, which represents 18.4 percent of the total regional land area of this category. Of this acreage, 83.3 percent, or 6,201 acres, is Open Space, 9.4 percent, or 695 acres, is Agriculture and the remaining 7.3 percent, or 545 acres, Active Recreation.

The area of Designated Open Space in suburban towns is 38,214 acres. This represents approximately 18 percent of the total regional area of this classification. Of this acreage 67.1 percent, 25,645 acres, is Open Space, 20.7 percent, or 7,898 acres, is Agriculture, and 12.2 percent, or 4,671 acres, Active Recreation.

The rural classification of Designated Open Space has a total of 41,052 acres. This area represents 39.2 percent of the total area of this regional classification. Of this total, 63.2 percent, or 25,931 acres, is Open Space, 28.8 percent, or 11,858 acres, is Agriculture, and 8 percent, or 3,263 acres, Active Recreation.

NATIVE AMERICAN TRIBAL RESERVATIONS

The federally recognized Mashantucket Pequot and Mohegan Tribal reservations account for approximately 2,736 acres in Southeastern Connecticut. This area is approximately 4.3 square miles and constitutes less than 1 percent of the total regional land area. Reservation areas have gaming/resort facilities and contain other housing and tribal government facilities.

**SOUTHEASTERN CONNECTICUT REGION OPEN SPACE USES
AS A PERCENTAGE OF DESIGNATED OPEN SPACE AREA,
2011, ALL TOWNS**

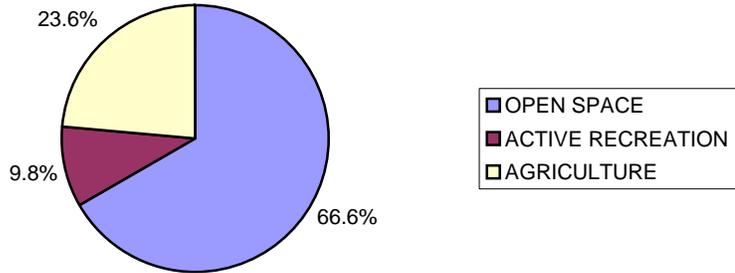


FIGURE 9

**SOUTHEASTERN CONNECTICUT REGION OPEN SPACE USES
AS A PERCENTAGE OF DESIGNATED OPEN SPACE AREA,
2011, URBAN TOWNS**

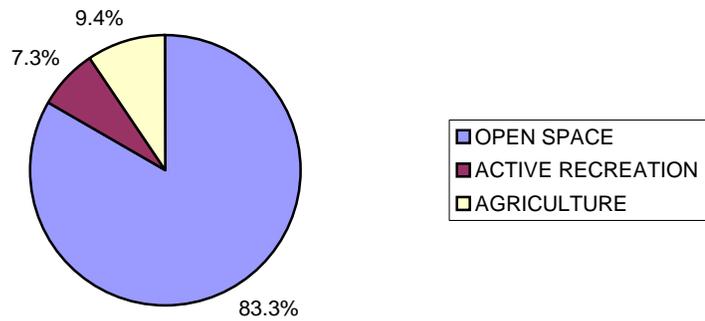
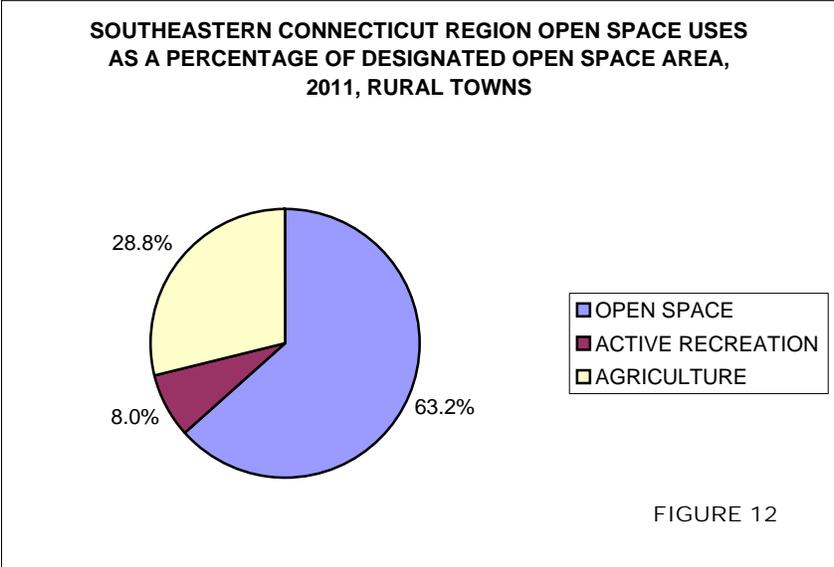
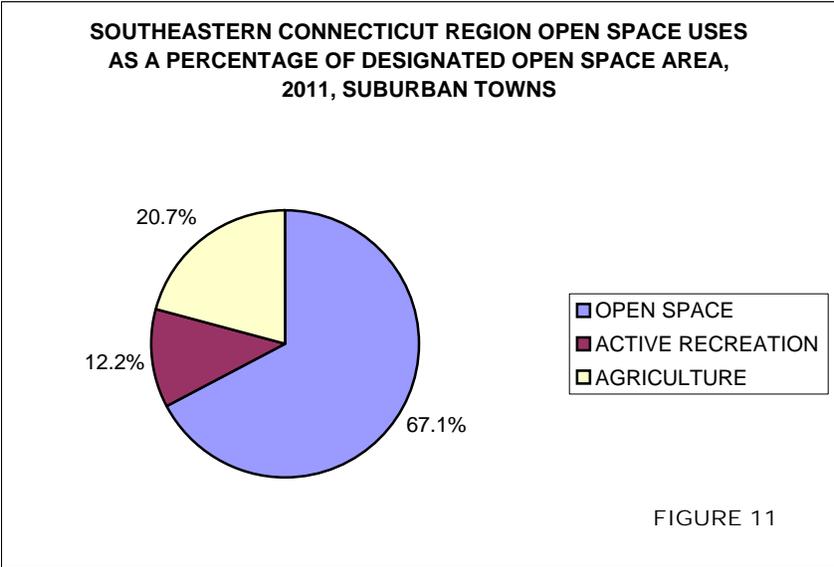


FIGURE 10



UNDEVELOPED LAND

In southeastern Connecticut, undeveloped land totals 142,780 acres, or 223 square miles. This represents land not utilized for any of the above developed or designated open space uses including land in residential parcels in excess of 5 acres. It includes forests, fields, wetlands, and waterbodies. As stated earlier in this study, undeveloped land represents

approximately 40 percent of the total area in the southeastern Connecticut Region. The majority of this category, at 63 percent, is located in suburban towns followed by rural towns with 30 percent and urban towns with 7 percent. This breakdown is fairly proportional to the land area of municipal classification within the region, as urban towns comprise 11.3 percent, suburban towns 59.5 percent and rural towns 29.2 percent of the region's total land area.

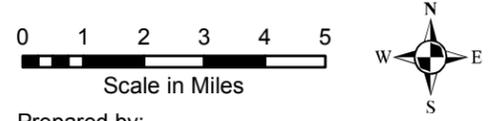
GENERALIZED LAND USE, 2011 Southeastern Connecticut Region

Legend

- Active Recreation
- Agriculture
- Agriculture Reserve
- Commercial
- Industrial
- Industrial - Extraction
- Institutional
- Institutional - Extensive
- Mixed Urban Use
- * Very Low Density Residential
- Residential - Low Density
- Residential - Medium Density
- Residential - High Density
- Native American Tribal Reservation
- Open Space
- Transportation, Communication and Utilities
- Undeveloped Land
- Waterbodies
- Primary Road
- Secondary Road
- Railroad
- Town Boundary

* Very Low Density Residential
(Total lot area shown.
Area over 5 acres is included in
Undeveloped Land category)

Source:
SCCOG and SCCOG Towns



Prepared by:
SCCOG Southeastern Connecticut
Council of Governments
Geographic Information System

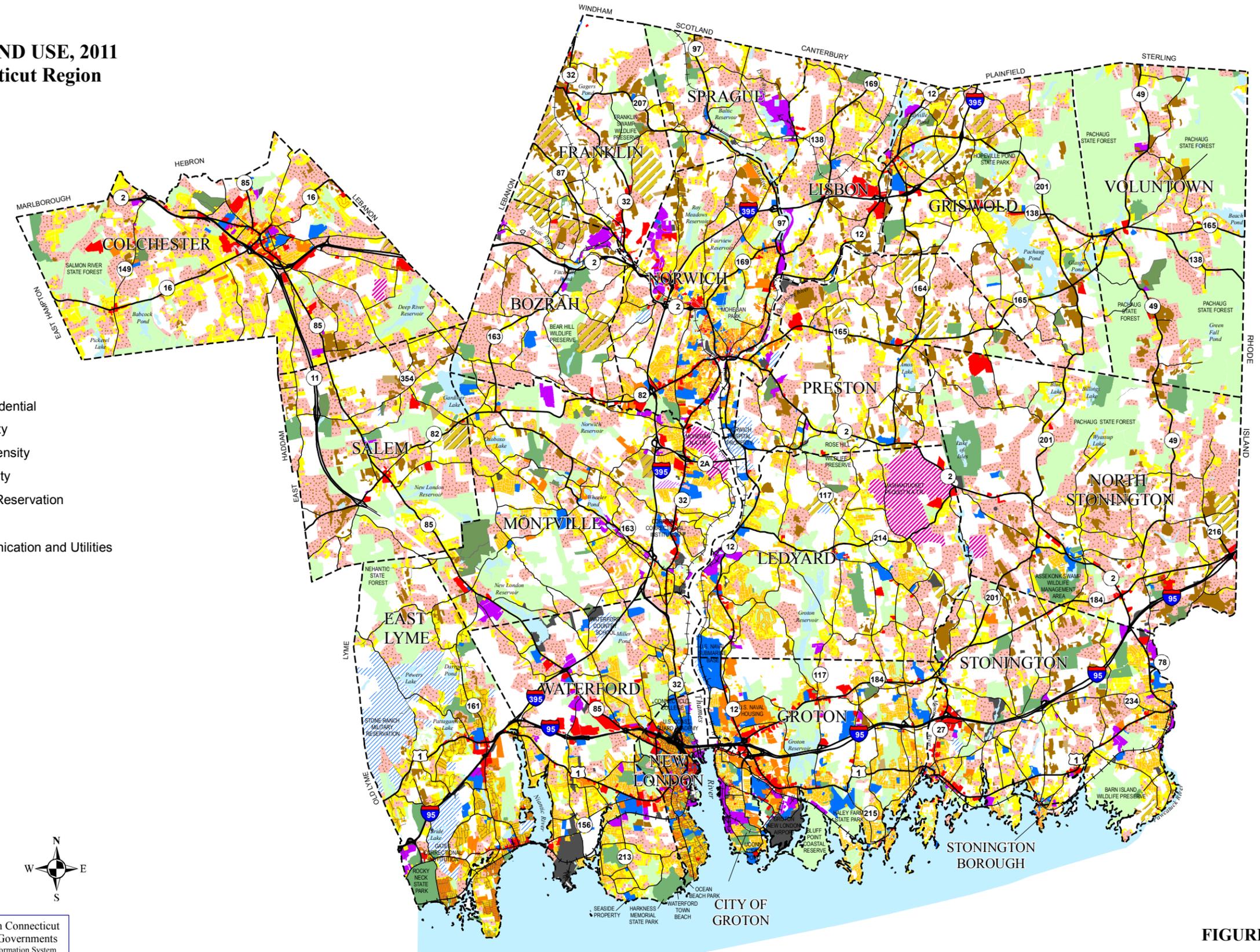


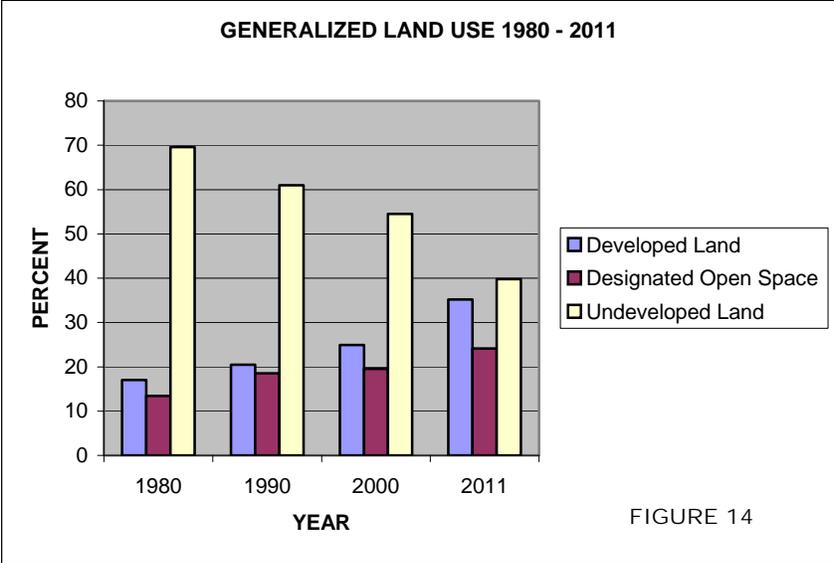
FIGURE 13

SUMMARY OF GROWTH CHANGES

A key issue recognized during this study was the difficulty in comparing this inventory with previously conducted inventories due to the change in technologies used to perform these land calculations. The process of compiling land use information has become increasingly more sophisticated with the advent of GIS software and the resultant availability of newly developed property line data. In prior years, the technique for compiling land use area data lacked detailed information at the parcel level. The consequence of these technical advances means that summary comparisons of land use from earlier periods to the present lose relevance. With this advancement in technology, the 2011 land use data presented in this document becomes the baseline for future comparisons of change.

The present property line database information used in this inventory is built on the specific parcel size for various land uses. Therefore, for the first time it accurately depicts not only distribution and proportional relationships among land uses but also the specific location and area of those land uses. The difference between the previous tabulation methods and what is now being used is evident when comparing generalized land use data for the past several decades. Figure 14 summarizes the data tabulation for Developed Land, Open Space, and Undeveloped Land from 1980 to the present. Between the years 1980 and 2000, the calculations were made using earlier methodologies. It was only in 2011 that the calculation method changed. A key indicator of the outcome of the technological advancement is represented as follows: The earlier data depicts a steady increase in the Developed Land and Open Space categories and accordingly, a proportional decrease in the Undeveloped Land category. However, the 2011 data, which utilized property line database with parcel acreage, depicts a totally different picture. The amount of actual undeveloped land that was previously identified is considerably less, and the amount of developed land is considerably more, than what previous inventories indicated.

The 2011 calculations are shown in Table 1. As explained in the text pertaining to residential uses, in an attempt to maintain continuity throughout the historical array of land use inventories conducted by this agency, the residential categories of low and very low-density were combined, as were the residential categories of medium and high-density. However, the new technology allows for the identification of very large residential parcels, creating an opportunity to further refine the classification of these large parcels. This resulted in the decision to allocate the portion of these large residential properties over 5 acres in the Undeveloped Land category. Lacking adequate information, previous inventories under-reported developed acreage and over-reported areas attributed to being undeveloped. Despite this change in methodology, Figure 14 makes it clear that the region is significantly more developed than previous inventories indicated.



* Note: 2011 inventory compiled using GIS (see narrative on p.15)