Chapter 6 Land Cover Change

Land Cover | Environmental Protection Agency (EPA)

"Land cover—the surface components of land that are physically present and visible—provides a means to examine landscape patterns and characteristics." - EPA

What is Land Cover?

Land cover represents the physical "covering" of a landscape. This is what can be visually seen using satellite and aerial imagery. While land cover is the type of surface on the ground, land use is how it's being used by people. The National Oceanic and Atmospheric Administration (NOAA) explains this contrast as follows:

"What is the difference between land cover and land use?

The two terms are often used interchangeably, but strictly speaking land cover captures the physical state of land resources. Examples of land cover include forest, grassland, wetland, and impervious paved surfaces. Land use on the other hand, denotes how the land is being used—whether the areas are residential, commercial, or industrial development. The same types of cover can be managed or used very differently." - NOAA

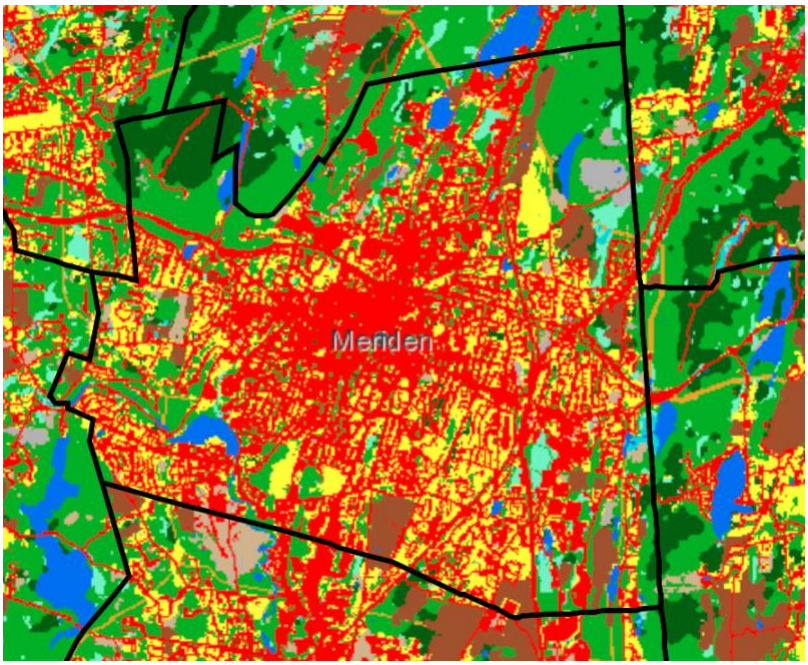
To learn more about land use in Meriden, consider visiting chapter three in the 2020 Meriden Plan of Conservation and Development.

Comparing land cover maps from different years allows us to see change over time. NOAA says that this information helps decision makers understand the impact of past management practices and anticipate possible outcomes of current ones.

6.1 Land Cover Changes Over Time

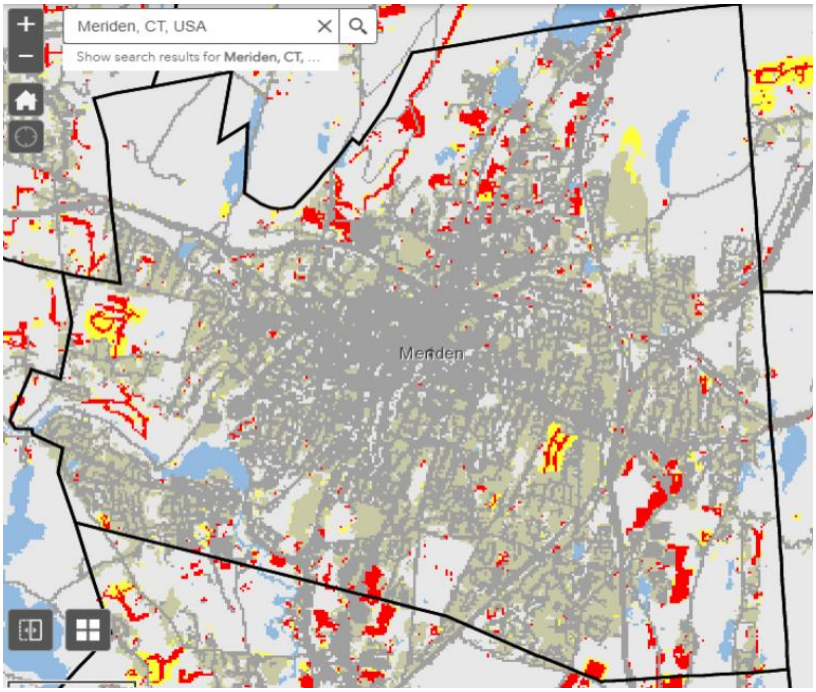
The University of Connecticut (UConn) Center for Land Use Education and Research (CLEAR) put together a series of maps detailing the changing landscape between 1985 and 2015. This information is derived from satellite remote sensing imagery. Data was collected across time for the following years: 1985, 1990, 1995, 2002, 2006, 2010, and 2015.

This section discusses two maps that address land cover classes in Connecticut. The first map looks at Meriden's land cover in 2015 and the second map shows how it changed between 1985 and 2015. The latter has a focus on newly developed areas and turf and grass additions.



Developed
Turf & Grass
Other Grass
Agricultural Field
Deciduous Forest
Coniferous Forest
Water
Non-forested Wetland
Forested Wetland
Tidal Wetland
Barren
Utility Rights-of-way (Forest)

2015 Land Cover in Meriden
Source: UConn CLEAR



Developed
Turf & Grass
Water
Undeveloped
Change to Developed
Change to Turf & Grass

Land Cover Change in Meriden (1985-2015)
Source: UConn CLEAR

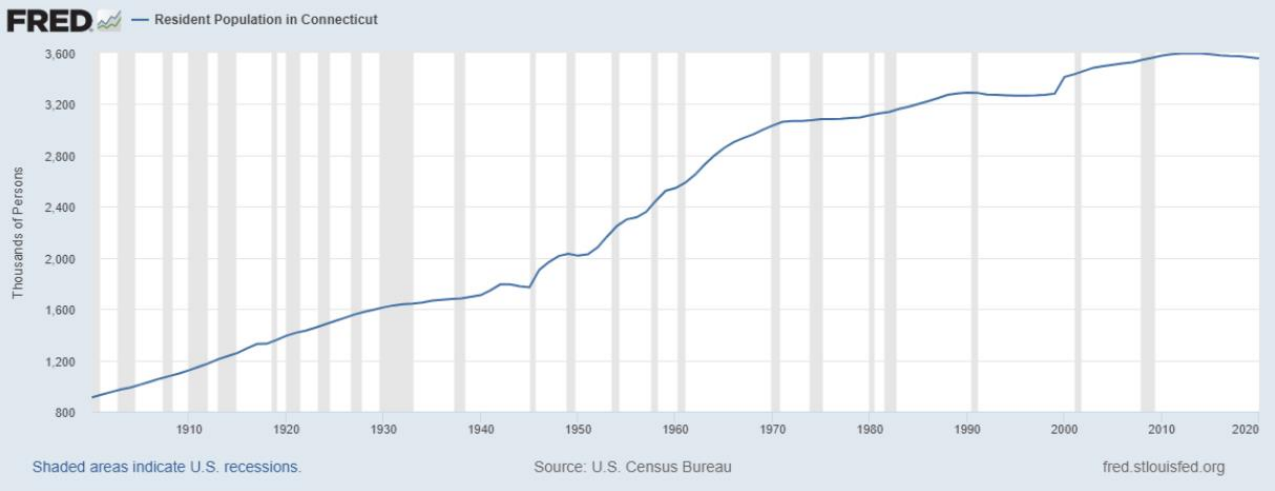
6.2 Forested Land

Forested land is the most significant land cover loss in the city. There were 4,952 acres (32.3%) forested land in 1985 compared to 4,367 acres (28.5%) in 2015. The decrease in forest was fueled by growing development. Forests are most abundant in Meriden's northeast and northwest corners and less common in highly developed areas. These findings are consistent with Connecticut's overall land cover trends. Throughout the state, forest cover represents the largest loss over time with a total decrease of 190 square miles. This amounts to about 13.3 acres of Connecticut's forested land gone each day.

6.3 Developed Land

Developed land experienced the most growth out of all the land cover classes. In 1985, Meriden had 6,131 acres (40.0%) of developed land and increased to 6,847 acres (44.7%) by 2015. As can be seen in the map above, most development is in the central part of the city and has begun to expand out over time. Development also increased in the greater state. Connecticut gained 149 square miles of developed land or about 10 acres per day over the study period. The need for development correlates to a growing population which climbed significantly after 1950 but has begun to slow down.

Connecticut Population



Source: [Federal Reserve Economic Data]

6.4 Agricultural Fields

Agriculture in Meriden is another land use category that went down. In 1985, there were 875 acres (5.7%) agriculture fields compared to 675 acres (4.4%) in 2015. According to the map, much of Meriden's agricultural fields are in the southwest and northeast areas of the city. The overall state also experienced a reduction in agricultural fields. Connecticut lost 62 square miles of its agricultural land over the study time—equating to about 4.4 acres per day. The decline in agricultural land can be attributed to the rise in development.

6.5 Turf and Grass

Turf and grass have increased in Meriden over time. This category corresponds to manicured grassy areas like lawns and sports fields that commonly reside in developed areas. The map shows turf and grass areas mixed in with much of the city's development. In 1985 there were 2,583 acres (16.9%) turf and grass compared to 2,636 acres (17.2%) in 2015. In Connecticut, turf and grass also increased alongside the developed classification. Between 1985 and 2015 turf and grass grew by 75 square miles or about 4.4 acres per day. In relative terms, turf and grass is one of the fastest growing land cover categories in the state.

Meriden Landcover Statistics Summary Table

2015 Land Cover		1985 Land Cover	
Forest	4,367 acres, 28.5%	Forest	4,952 acres, 32.3%
Developed	6,847 acres, 44.7%	Developed	6,131 acres, 40.0%
Agricultural Field	675 acres, 4.4%	Agricultural Field	875 acres, 5.7%
Turf and Grass	2,636 acres, 17.2%	Turf and Grass	2,583 acres, 16.9%

Sources and Methods

Statistics and map visuals on the changing landscape in Meriden came from the University of Connecticut (UConn) Center for Land Use Education and Research (CLEAR). Additional insights on the state of Connecticut were derived from the UConn CLEAR story map: "Tracking Land Cover Change in Connecticut."

The four land cover classes: (1) forested, (2) developed, (3) agricultural fields, and (4) turf and grass were referenced because they make up the majority of Meriden's landscape and represent the most significant change over time.

Description of Land Cover Classes by UConn CLEAR

Developed	High-density built-up areas typically associated with commercial, industrial and residential activities and transportation routes. These areas can be expected to contain a significant amount of impervious surfaces, roofs, roads, and other concrete and asphalt surfaces.
Turf & Grass	A compound category of undifferentiated maintained grasses associated mostly with developed areas. This class contains cultivated lawns typical of residential neighborhoods, parks, cemeteries, golf courses, turf farms, and other maintained grassy areas. Also includes some agricultural fields due to similar spectral reflectance properties.
Other Grasses	Includes non-maintained grassy areas commonly found along transportation routes and other developed areas, and within and surrounding airport properties. Also likely to include forested clear-cut areas, and some abandoned agricultural areas that appear to be undergoing conversion to woody scrub and shrub cover.
Agricultural Field	Includes areas that are under agricultural uses such as crop production and/or active pasture. Also likely to include some abandoned agricultural areas that have not undergone conversion to woody vegetation.
Deciduous Forest	Includes southern New England mixed hardwood forests. Also includes scrub areas characterized by patches of dense woody vegetation. May include isolated low density residential areas.
Coniferous Forest	Includes southern New England mixed softwood forests. May include isolated low density residential areas.
Water	Open water bodies and watercourses with relatively deep water.
Non-forested Wetland	Includes areas that predominately are wet throughout most of the year and that have a detectable vegetative cover (therefore not open water). Also includes some small water courses due to spectral characteristics of mixed pixels that include both water and vegetation.

Forested Wetland	Includes areas depicted as wetland, but with forested cover. Also includes some small water courses due to spectral characteristics of mixed pixels that include both water and vegetation.
Tidal Wetland	Emergent wetlands, wet throughout most of the year, with distinctive marsh vegetation and located in areas influenced by tidal change.
Barren	Mostly non-agricultural areas free from vegetation, such as sand, sand and gravel operations, bare exposed rock, mines, and quarries. Also includes some urban areas where the composition of construction materials spectrally resembles more natural materials. Also includes some bare soil agricultural fields.
Utility Rights-of-way (Forest)	Includes utility rights-of-way. This category was manually digitized on-screen from rights-of-way visible in the Landsat satellite imagery. The class was digitized within the deciduous and coniferous categories only.