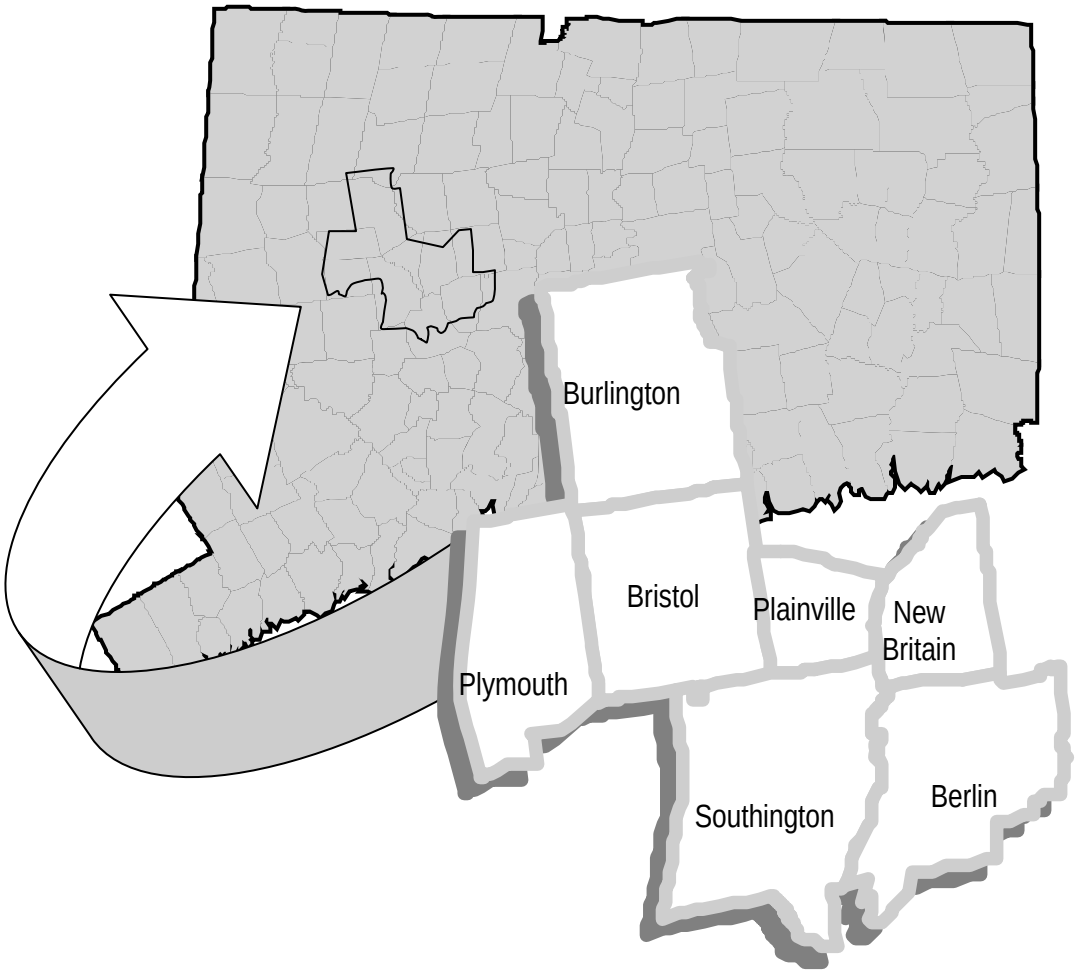
Plan of Conservation and Development For the Central Connecticut Region 2007-2017

"Strength through Diversity"



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The Central Connecticut Regional Planning Agency (CCRPA) presents its Plan of Conservation and Development for the central Connecticut region, for the period 2007-2017, in accordance with Connecticut General Statutes.

This plan represents the CCRPA's goals and recommendations for the region in all of our areas of endeavor.

The communities of Berlin, Bristol, Burlington, New Britain, Plainville, Plymouth and Southington look forward to continued responsible growth and prosperity with a spirit of cooperation, working together as the central Connecticut region.

Respectfully,

Morgan Seelye
Chairman
Central Connecticut Regional Planning Agency

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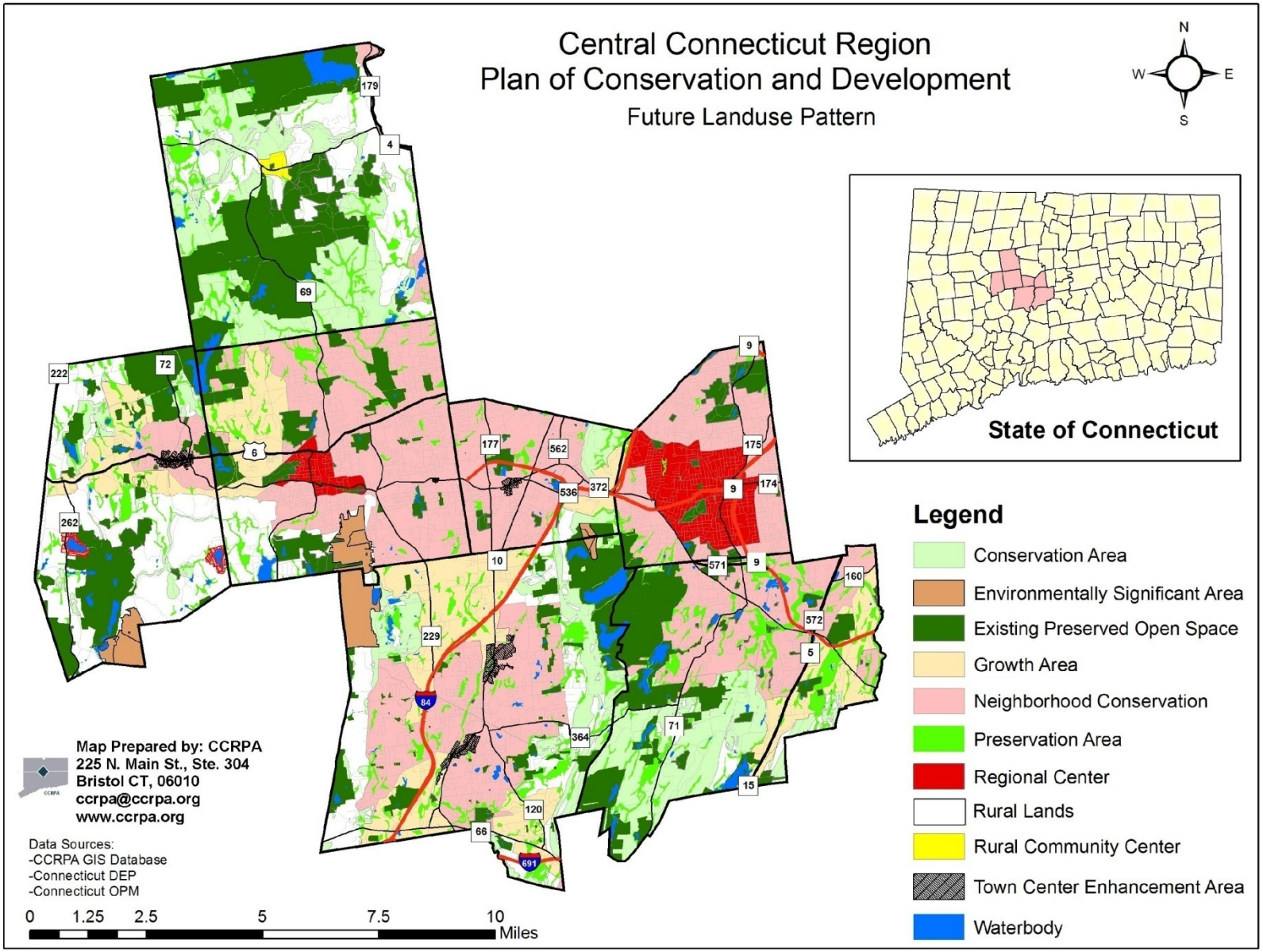
Central Connecticut Region
Plan of Conservation and Development
Future Landuse Pattern
N
W
E
S
State of Connecticut
Legend
Conservation Area
Environmentally Significant Area
Existing Preserved Open Space
Growth Area
Neighborhood Conservation
Preservation Area
Regional Center
Rural Lands
Rural Community Center
Town Center Enhancement Area
Waterbody
Map Prepared by: CCRPA
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Data Sources:
-CCRPA GIS Database
-Connecticut DEP
-Connecticut OPM
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Explanation of Map Legend Terms

Development Area Policies (In order of State priority)
1) Regional Centers – Redevelop and revitalize the economic, social, and physical environment of the state's traditional centers of industry and commerce.

2) Neighborhood Conservations Areas – Promote infill development and redevelopment in areas that are at least 80% built up and have existing water, sewer, and transportation infrastructure to support such development.

3) Growth Areas – Support staged urban-scale expansion in areas suitable for long-term economic growth that are currently less than 80% built up, but have existing or planned infrastructure to support future growth in the region.

4) Rural Community Centers – Promote concentration of mixed-use development such as municipal facilities, employment, shopping, and residential uses within a village center setting.

Conservation Area Policies (In order of State priority)

1) Existing Preserved Open Space – Support the permanent protection of public and quasi-public land dedicated for open space purposes.

2) Preservation Areas – Protect significant resource, heritage, recreation, and hazard-prone areas by avoiding structural development, except as directly consistent with the preservation value.

3) Conservation Areas – Plan for the long-term management of lands that contribute to the state's need for food, water and other resources and environmental quality by ensuring that any changes in use are compatible with the identified conservation value.

4) Rural Lands – Protect the rural character of these areas by avoiding development forms and intensities that exceed on-site carrying capacity for water supply and sewage disposal, except where necessary to resolve localized public health concerns.

Additional Regional Categories:

Town Center Enhancement Area – Areas of relatively denser development with local commercial and/or municipal centers, where public activity is vital function.

Environmentally Significant Area – Rural land not designated for particular use, but significant for its landforms, waterbodies, etc. Areas should be considered for open space acquisition.

Introduction

The central Connecticut region is richly diverse. The seven, central Connecticut communities of Berlin, Bristol, Burlington, New Britain, Plainville, Plymouth, and Southington are united in their diversity and their interrelationships. The region has urban, rural and small town elements that weave a varied pattern.

The Central Connecticut Regional Planning Agency (CCRPA) represents and assists those seven communities in the planning areas of transportation, land use, economic development, homeland security, public health and safety, and environmental stewardship, especially as they relate to the region as a whole.

Working Farm in Plymouth.

The CCRPA celebrated its 40th anniversary in service to its member municipalities in 2006.

This Plan of Conservation and Development is designed as a policy guide based on goals to aspire toward over the next 10 years.

Regional Planning

Regional planning in Connecticut is accomplished through the work of Regional Planning Organizations (RPOs), which might be named councils of governments, regional planning agencies, or councils of elected officials, depending upon the structure of their governing boards. The CCRPA was organized in 1966 to coordinate planning efforts for the towns and cities that voluntarily join the agency.

New Britain City Hall.

The Connecticut General Statutes (Sec. 8-35a) states that *"At least once every ten years, each regional planning agency shall make a plan of development for its area of operation, showing its recommendations for the general use of the area including land use, housing, principal highways and freeways, bridges, airports, parks, playgrounds, recreational areas, schools, public institutions, public utilities, agriculture and such other matters as, in the opinion of the agency, will be beneficial to the area. Any regional plan so developed shall be based on studies of physical, social, economic and governmental conditions and trends and shall be 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."* The last plan in the region (Central Connecticut Regional Development Plan: Future Land Use – 2010) was adopted September 30, 1993.

The first regional plan, Regional Development Action Plan, was adopted on May 1, 1969.

Other CCRPA plans that were considered and reviewed in the preparation of this plan were the Long-Range Transportation Plan (in process), the Central Connecticut Plan for Alternative Transportation and Health (CCPATH, 2005), Busway West (2004), the Pequabuck River Watershed Management Plan (2005), and the Transit Improvement Plan (2006).

State Planning

The guiding document on the state level of planning is the *Conservation and Development Policies Plan for Connecticut, 2005-2010.* The state plan was carefully considered in the construction of this Regional Plan of Conservation and Development. The plan contains six growth management principles, which are articulated in The Connecticut General Statutes (Sec. 8-35a) with "*The regional plan shall identify areas where it is feasible and prudent (1) to have compact, transit accessible, pedestrian-oriented mixed use development patterns and land reuse, and (2) to promote such development patterns and land reuse and shall note any inconsistencies with the following growth management principles: (A) Redevelopment and revitalization of regional centers and areas of mixed land uses with existing or planned physical infrastructure; (B) expansion of housing opportunities and design choices to accommodate a variety of household types and needs; (C) concentration of development around transportation nodes and along major transportation corridors to support the viability of transportation options and land reuse; (D) conservation and restoration of the natural environment, cultural and historical resources and traditional rural lands; (E) protection of environmental assets critical to public health and safety; and (F) integration of planning across all levels of government to address issues on a local, regional and state-wide basis".*

Other state plans considered in this Plan of Conservation and Development include the *State Transportation Strategy* (TSB, 2002), *Connecticut Statewide Comprehensive Outdoor Recreation Plan* (DEP, 2005), and the *Connecticut Long Range State Housing Plan, 2005-2009* (DECD, 2005).

Local Planning

State statute requires municipalities to update their plans of conservation and development every 10 years. The local plans consider the regional plan as an element of the plan process. Similarly, the local plans contain important considerations in the creation of this regional plan. The following plans of conservation and development were considered in preparation of this plan:

Berlin (2003)	New Britain (1985)	Southington (2006)
Bristol (2000)	Plainville (1997)	
Burlington (1997)	Plymouth (2005)	

Regional Build-Out Analysis (RBOA)

The CCRPA initiated a project in 2005, funded in part through a DEP grant, to construct a build-out analysis for the region. A build-out analysis is a tool designed to help visualize the extent and location of development in the region utilizing specific computer software in tandem with CCRPA's Geographic Information System (GIS). This process provides a spatial analysis of each community and projects the shape of development over time. The details are covered in another section of this plan.

Integrated Planning

Integrated planning not only refers to consideration in this plan of other agency plans, state and local plans, but also incorporation of how plan elements interact with each other. Although each element of housing, transportation and land use, for example, is treated separately within the text of the plan, their interdependence is always considered in the plan recommendations, or actions.

Plan Recommendations

The recommendations of the plan are interconnected and should be considered as in an integrated program intended to help the communities of the region prosper and grow, while conserving natural resources and preserving its heritage. The mission statement of the CCRPA is "To plan and promote regional policies and programs to enhance the vitality, accessibility and quality of life in our communities." To achieve the mission, the following plan recommendations comprise the CCRPA's goals for the plan years of 2007-2017:

Land Use

- Direct development to areas already served by water, sewer and utilities, along major transportation corridors.
- Discourage the development of greenfields.
- Support redevelopment of city and town centers through infill development, adaptive reuse of historic properties, and brownfields reclamation.
- Encourage compact design that utilizes mixed use development with densities appropriate for transit and pedestrian orientation.
- Promote the health and well-being of the region's citizenry through physical activity by supporting pedestrian-oriented development.

Economic Development

- Strive to retain viable industries.
- Capitalize on opportunities for transit-oriented development.
- Support programs that provide opportunities for job training and education.
- Promote infill and brownfield redevelopment efforts.
- Promote the livability of the region as a home for employers and employees.
- Develop market niches that capitalize on existing assets.
- Recognize the region's cultural and historic heritage as an economic asset.
- Consider agricultural viability as part of economic development.

Transportation

- Develop a modal balance within the regional transportation network that provides adequate choices for travelers in the region.
- Support projects that increase the safety and security of the transportation system.
- Improve accessibility and mobility options available to elderly and disabled people of the region.
- Promote projects that consider all users of a transportation facility, such as bicyclists and pedestrians.
- Advance projects that consider the context and scale of their setting.
- Encourage development projects that support and enhance transit corridors.
- Promote efforts to establish cleaner fuel burning vehicles.

Infrastructure and Facilities

- Preserve the existing infrastructure by supporting the redevelopment of older neighborhoods.
- Support business development through the provision of advanced information systems infrastructure.
- Encourage intermunicipal facility sharing agreements that increase efficiency and cost savings.
- Assist member municipalities in forecasting future facility needs.

Housing

- Support the provision of a wide range of housing types to fill the varied needs of the region's citizenry.

- Encourage cluster housing developments in appropriate areas to allow the conservation of open lands.
- Encourage the preservation of the existing housing stock for renters and owners.
- Encourage residential development in areas of existing infrastructure.
- Discourage excessive land consumption in the development of new housing.
- Support stabilization efforts to preserve viable residential neighborhoods.
- Promote adaptive reuse of underutilized or vacant structures for additions to the regional housing stock.
- Support the development of additional housing for low and moderate income residents along transit corridors.

Natural Resources and Open Space

- Support the use of the conservation strategies outlined in the Pequabuck River Watershed Management Plan.
- Support municipal open space acquisitions that relate to regional greenways.
- Promote transportation solutions that save energy and protect the environment, such as roundabouts, and transit system enhancements.
- Encourage farmland preservation techniques as part of an open space strategy.
- Promote efforts by the communities of the Region to control greenhouse gas (GHG) emissions.

Emergency Management

- Support the provision of member municipalities with the equipment needed for emergency preparedness, response and recovery.
- Develop regional plans for emergency preparedness, response - including evacuations – and recovery through interdepartmental coordination.

Regional Build-Out Analysis (RBOA)

Background and Process - The Regional Build-Out Analysis (RBOA) is a CCRPA project that analyzed land use projections to form a forecast of the future shape of development in the region under several scenarios. The project was funded through the U.S. Environmental Protection Agency and the Connecticut Department of Environmental Protection, by the Clean Water Act, Section 604b, Water Quality Planning Grant.

The RBOA utilized updated current land use information by community and applied natural and manmade constraints (slope, wetlands, regulatory buffers, floodplains) to development of land susceptible to development, including agricultural land. Current zoning regulations were applied to the net developable land to produce maps and tables of build-out yields in terms of residential, commercial and industrial parcels. The project assumes three build-out scenarios: 25%, 50%, and 70%. The process produces theoretical growth scenarios for each community, and the region, based on development constraints and zoning in effect.

The build-out analysis is a tool to project all possible future growth in a town given present environmental constraints and its land use regulations utilizing a Geographic Information System (GIS). Build-out analyses can be used to visualize current land use in a town and simulate a visual scenario of future development and determine where it can be subdivided and how much additional development could be permitted under the current zoning. It is a very important tool to encourage and empower local actions to preserve and enhance the quality of life by streamlining future development to maintain balance between environment and development. The build-out analysis helps in the understanding of growth patterns under current zoning and the long-term impacts of growth on population increases, land consumption, traffic and water demand, to name a few. This process

enables towns to formulate development strategies that can enhance the pattern of new development.

Build-out Methodology - The Central Connecticut Regional Build-Out Analysis project is a combination of several small build-out analyses. The Central Connecticut Region comprises seven cities and towns, Town of Berlin, City of Bristol, Town of Burlington, City of New Britain, Town of Plainville, Town of Plymouth and Town of Southington. Each of these cities and towns has its own zoning and subdivision regulations. A build-out analysis was developed for each individual city and town and the results were combined to produce a regional view.

- Steps in the build-out process
    - collection and updating of land use, zoning and area information GIS layers
    - collection of development constraints layers such as wetlands, water bodies, watercourses, slope and soils
    - analysis of build-out potential using overlay and CommunityViz tools
    - calculation of yields and impacts
    - presentation of results in integrated map form

Source Data - A variety of source materials and information was collected from different sources. CCRPA is the repository for most of the GIS layers regarding land use, zoning, and parcels for the region. Other GIS data such as floodplains, slopes, roads, wetlands, streams and waterbodies, were obtained from CTDEP, USGS, and NRCS. Several overview maps of the towns with various data layers were plotted for local review. It is critical that the appropriate town officials review the various GIS layers developed or updated for this project. These maps were reviewed with the town planner and/or the zoning enforcement officer in each city and town for accuracy.

The land use, zoning, and parcel maps were updated as per the town planners' advice to reflect the current state for each town. Careful attention was given to update these data layers as these will be the most important source layers in developing build-out scenarios. Land use mapping was compared with digital orthophotos to check for errors.

GIS Methodology - After the datasets described above were updated, the following series of steps were taken to start the build-out analysis.

1. The assumption is that development will occur on land that is not now developed, so the analysis began by creating a GIS layer of all developed land by combining all uses in a single coverage, representing all developed land.

2. All developed lands were subtracted from the potential available land shown on the land-use maps to produce a GIS layer of undeveloped land with attributes of the zoning code.

3. A layer of all the build-out constraints was created to simplify the GIS process. Build-out constraints included wetlands, 100 feet buffer of streams, 100 year floodplain areas, waterbodies, and land with slope over 25 percent.

4. The newly created constraints layer was subtracted from the unprotected, undeveloped land to produce a GIS layer of all unprotected, undeveloped land which could potentially be developed or contribute to development.

5. The developable layer was then merged with the updated parcel layer to produce an accurate developable parcel layer.

6. Three types of summary tables were produced from the polygon attribute table for potentially developable land from Step 4. One table showed the total area within each town for each current land use distribution. A second table showed total vacant land in each town, and the third table comprised developable land in each town with attributes of zoning.

Analysis and Yield - After the preliminary GIS analysis, the layers were prepared for the build-out processing. An ArcGIS extension called CommunityViz was utilized to develop build-out scenarios for each cities and towns. The newly created developable parcels with zoning attributes were the Input data for this process. The zoning regulations such as floor area ratios, percent lot coverage, heights limit and lots requirements for each zone were provided as the build-out condition. CommunityViz produces numerical and visual build-out data based on current zoning regulations. Three build-out scenarios were developed for each city and town. Analyses were conducted for 25%, 50%, and 70% build-out scenarios[1]. During the 70% build-out analysis, the build-out capacity for industrial zones was kept at 50% as the 70% density is not a reasonable scenario for the industrial zone because of the amount of land industry needs for parking, open space, and utilities.

Shaded areas on the map indicate net developable land in the region, and the uses currently zoned.

- Yellow: residential Pink: industrial Red: commercial

[1] The maximum build-out was kept at 70% because the potentially buildable acreage within any zoning district is generally reduced by 25-30% for roads, open space requirements, and configuration loss.

Demographics

Introduction

The demographics or population characteristics of the region reflect influences and trends that explain the historic settlement and the current development patterns. Current and projected population characteristics can provide a helpful barometer in determining the future development of the area.

The table below illustrates total population figures over time for communities in the central Connecticut region.

Population by Municipality, 1980-2010

	1980*	1990*	2000*	2005**	2010***	2010****
Berlin	15,121	16,787	18,215	19,032	19,100	19,825
Bristol	57,370	60,640	60,062	60,875	61,100	61,174
Burlington	5,660	7,026	8,190	8,688	9,050	9,170
New Britain	73,840	75,491	71,538	72,395	73,220	73,168
Plainville	16,401	17,392	17,328	17,786	17,880	18,232
Plymouth	10,732	11,822	11,634	12,223	12,410	12,775
Southington	36,879	38,518	39,728	41,367	40,190	42,947
Region	216,003	227,676	226,695	232,366	232,950	237,291

** US Census, **CERC (2005), ***ConnDOT (2003), ****CERC (2005)*

The Census data reveals that changes in population between 1980 and 1990 are significantly different than changes recorded between 1990 and 2000.

Population Density

Population density, estimated for 2005 is illustrated in the following table and totaled for the region. The table also shows the diversity of the communities in this region which contains urban, suburban and rural neighborhoods.

Population Density by Square Mile

Community	Size in Square Miles	Population 2005	Population Density by Square Mile
Berlin	26.5	19,032	718
Bristol	26.5	60,875	2,297
Burlington	29.8	8,688	292
New Britain	13.3	72,395	5,443
Plainville	9.9	17,786	1,797
Plymouth	21.7	12,223	563
Southington	35.9	41,367	1,152
The Region	163.6	232,366	1,420

Population by Age, Race and Ethnicity – The distribution of population by age is helpful in determining waves of dependent populations (school age and seniors) to forecast needs to be served by municipal expenditures. Population age clusters are displayed in the following table by community and Census years 2000 and 1990.

Population by Age Range														
	Berlin		Bristol		Burlington		New Britain		Plainville		Southington		Plymouth	
Age Range	**2000**	**1990**	**2000**	**1990**	**2000**	**1990**	**2000**	**1990**	**2000**	**1990**	**2000**	**1990**	**2000**	**1990**
0-4 years	1,010	1,080	3,759	4,280	627	564	4,443	5,357	874	1,087	2,432	2,482	730	848
5-9 years	1,419	1,126	4,106	3,728	575	558	5,083	4,507	1,096	988	2,648	2,537	886	845
10-19 years	2,364	2,014	7,098	6,963	1,278	1,059	10,341	8,736	2,037	2,001	5,195	5,208	1,539	1562
20-29 years	1,370	1,991	7,454	11,004	539	736	11,709	15,638	2,067	2,832	3,492	5,436	1,227	1750
30-39 years	2,607	2,953	10,199	10,814	1,335	1,463	10,234	12,138	2,852	3,180	6,596	6,417	2,011	2284
40-49 years	3,397	2,370	9,451	7,508	1,743	1,370	9,864	7,222	2,868	2,366	6,172	6,274	2,026	1580
50-59 years	2,294	1,686	6,560	5,330	1,237	603	6,354	5,426	2,249	1,694	5,600	3,817	1,359	923
60-64 years	734	915	2,523	2,767	264	216	2,297	3,708	712	839	1,721	1,756	397	483
65 and over	3,020	2,652	8,912	8,246	592	457	11,213	12,759	2,573	2,405	5,872	4,591	1,459	1547

Source: US Census, 2000

A review of dependent populations (under 19 years of age and over 65 years of age) is useful for forecasting facility needs, such as schools and senior housing. The regional increase of residents over 65 years old was modest when comparing percentages from 1990 to 2000 (14.34% in 1990 and 14.84% in 2000). On a regional basis, the percentage of the school age population cluster decreased significantly (25.27% in 1990 and 19.84% in 2000) in relation to the total population of the region.

According to the 2000 U.S. Census, the region's median age was 39.5 years old.

Population by Race and Ethnicity – The population clusters of each community reflect an overall diversity of races and ethnic heritage in the central Connecticut region. Understanding the location and details of this population category is useful in establishing goals and direction in all areas of planning that reflect a broad range of backgrounds.

Population by Race and Ethnicity								
	Berlin	Bristol	Burlington	New Britain	Plainville	Southington	Plymouth	Region
White alone	17,410	53,512	7,877	42,418	15,805	37,802	11,164	185,988
Black or African American alone	42	1,347	22	6,587	432	402	27	8,859
American Indian and Alaska Native alone	4	105	0	135	28	42	12	326
Asian alone	346	862	82	1,753	231	288	7	3,569
Native Hawaiian and Other Pacific Islander alone	14	13	0	28	5	11	0	71
Some other race alone	0	88	10	133	32	0	0	263
Two or more races	150	810	41	1,375	193	379	134	3,082
Hispanic or Latino	249	3,325	158	19,109	602	804	290	24,537

Source: US Census, 2000

Persons of Hispanic origin accounted for 6.6% of the region's total in 1990 and 10.8% in 2000, representing the greatest gain among the groups listed in the above table in that 10-year span. Based on Census data related to household language by linguistic isolation, 2.6% of the region's population report not being able to communicate fluently in English (compare to 5.7% in New Britain).

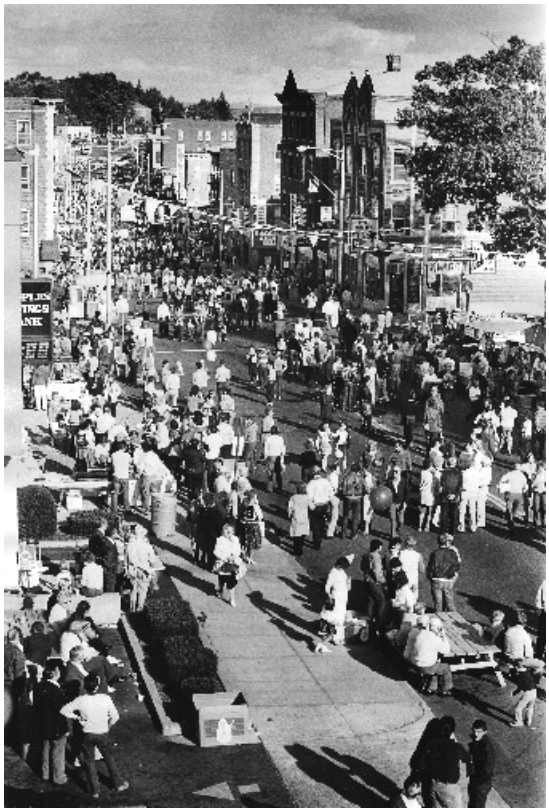
Regional Build-Out Population Projections

Variables affecting changes in population include actual developable land available, residential zoning requirements and historical household sizes. The build-out process calculates estimated population increases based on historical data on household size. Calculations were made at 25%, 50% and 70% build-out. The percentages in the following table represent increases above the base of land already developed.

Municipality	Additional Residents per Build-Out Scenario		
	25%	50%	70%
Berlin	1,005	1,635	2,198
Bristol	3,236	4,648	5,931
Burlington	2,794	4,763	6,409
New Britain	1,147	1,439	1,720
Plainville	1,051	1,813	2,383
Plymouth	3,051	5,392	7,374
Southington	5,967	7,895	9,690
Central Connecticut Region	18,251	27,585	35,705

Significant Findings – The following significant findings encapsulate the vital points from this section.

- ✓ The growth of minority populations underpins the diversity of the region and underscores the value of considering needs of these resident clusters.
- ✓ Population projections forecast modest growth over the next decade, unlike the boom of the 1980s.
- ✓ The build-out analysis reveals that, under current zoning and available land, that over 18,000 new residents can be accommodated at 25% regional build-out.
- ✓ Regionally, school-age population dropped almost 6% between 1990 and 2000.
- ✓ The population segment of residents 65 years old and older remained essentially constant between 1990 and 2000.



Land Use

Introduction

A plan of conservation and development is first and foremost a physical plan. It is a schematic for integrating the types of land uses most compatible with their environment. Each environment has a carrying capacity for certain land uses that can vary widely. Another limiting factor to consider is the existing and planned infrastructure to sustain the human habitat.

Development Patterns: Current Land Use

Historic development patterns followed more or less concentric patterns originating from town centers or downtowns. Current development in the region does not form discernible patterns in each community; rather the pattern is dictated by market pressures in search for available land. While such development is conforming to local zoning regulations, it may not consider the goals of each community's plan of conservation and development. It may not consider existing infrastructure as well for delivery of water, sewer and utilities. This form results in haphazard and sprawling development.

Storefronts with apartments above in Terryville section of

The region is home to some prime agricultural soils and farming operations. Most of this land, however, is zoned residential which opens the door to development of subdivisions. The state has a farmland preservation program that provides funds for transfer of development rights in return for the continuation of agricultural activity on the land. The Public Act 490 program gives tax incentives to encourage landowners not develop their land, and DEP Land Acquisition grants exist to preserve farmland. All of these programs are not operating at the rate of land consumption for residential development.

Local efforts toward revitalization of town centers, open space acquisition and brownfields redevelopment signal a reaction against sprawl development patterns locally.

Build-Out Scenarios: Future Land Use

The process of constructing a build-out analysis required assessing the buildability on current available land after natural constraints were considered. Logically, the most built out cities, such as New Britain and Bristol, contain less available land; however, the region still holds widely scattered developable land that would support future sprawl patterns.

The net developable land (NDL) in the region totaled approximately 17,000 acres, of which the vast majority is zoned for residential use (approximately 15,000 acres). This total represents approximately 16% of the total land in the region, indicative of the fact that people have been developing the region for hundreds of years. Within the region, there is wide variation in the acreage of land available for development, from urban New Britain (3.4%of the City's land is considered developable) to rural Plymouth (27.7% of the town's total acreage is considered developable). Although Burlington is

decidedly more rural than Plymouth, only 17.5% of its land could be considered developable, due to the high percentage of acreage owned as state forest and water company watershed land.

In total area of land considered developable, Southington leads the region with 5,224 net acres of developable land. Thus, in terms of impact, Southington can be expected to experience the greatest impacts associated with build out over the long term.

Center Street in Southington Center is an example of how streetscapes contribute to revitalization

Municipality	Net Developable Land (NDL) in Acres	NDL as a Percentage of Municipality's Total Land	NDL as a Percentage of Total NDL for Region
Berlin	1,754	10.5%	10.2%
Bristol	1,759	10.2%	10.2%
Burlington	3,358	17.5%	19.5%
New Britain	280	3.4%	1.6%
Plainville	940	14.1%	5.4%
Plymouth	3,907	27.7%	22.6%
Southington	5,224	22.7%	30.3%

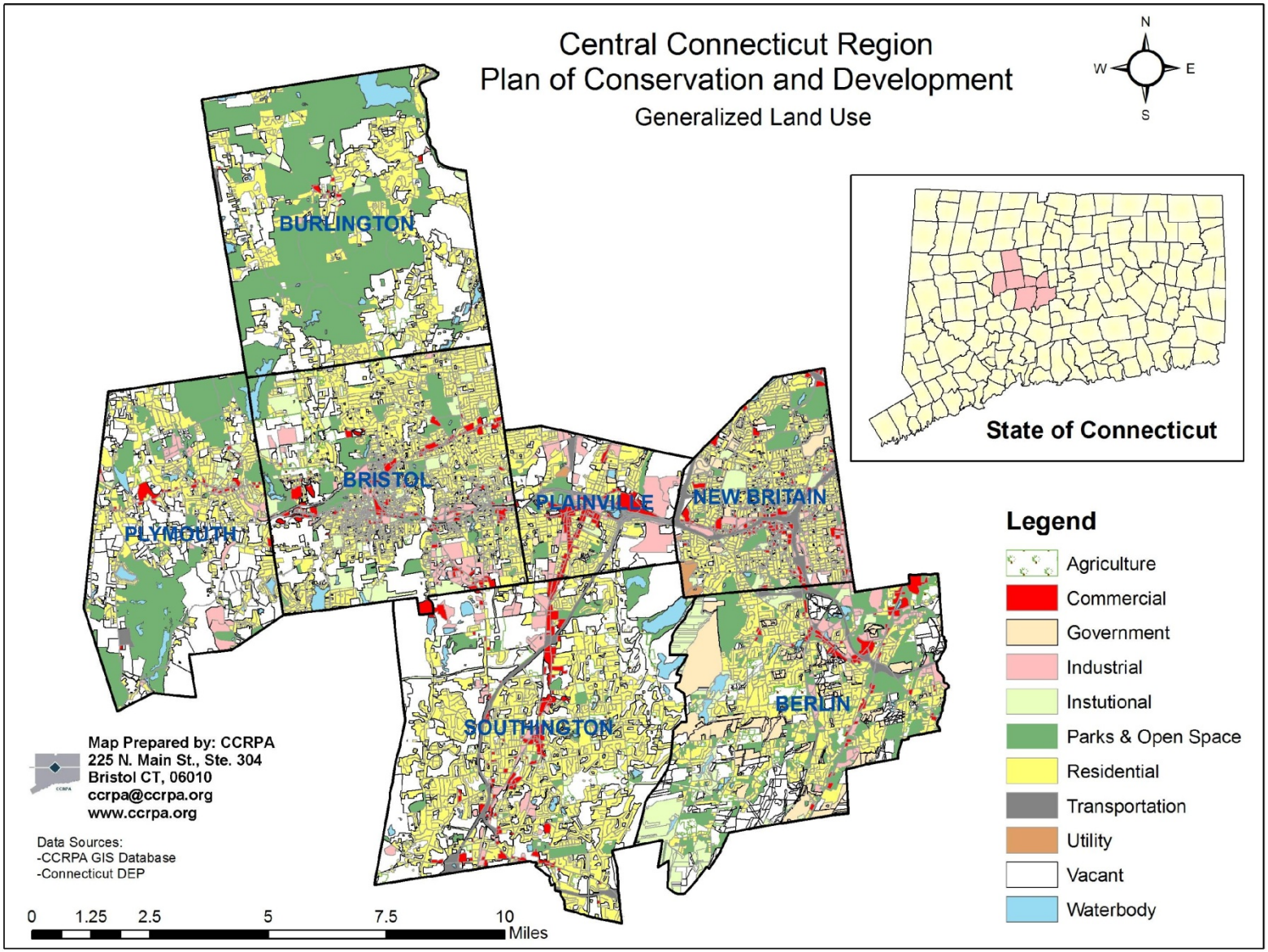
A much higher rate of land consumption than that of population increases is symptomatic of sprawl conditions. For the communities that experienced increases in population in the ten years between 1990 and 2000, the following table contrasts population increase during the period against acres developed. While a separation of uses is still a valuable goal of zoning, this land use tool has not been brought to bear on the threat of sprawl.

Municipality	1990-2000		Additional Residents per Acres Developed over the Period
	Population Increase*	Land Developed (Acres)**	
Berlin	1,428	261	5.5
Burlington	1,164	154	7.5
Southington	1,210	455	2.6

**University of Conn. Center for Land Use Education and Research (CLEAR), **Conn. Economic Research Center (CERC)*

Significant Findings

- ✓ The historic pattern of land development and the future pattern of land development derived from the regional build-out analysis indicate sprawl style expansion.
- ✓ The rate of land consumption far exceeds other components of growth.
- ✓ Zoning has not responded to address sprawl conditions.
- ✓ Potential exists for significant future land use development in the region.
- ✓ Farmland is being lost to residential development.
- ✓ Various elements of "smart growth" such as brownfields reclamation, town center revitalization and open space acquisition have gained acceptance in every town.


Central Connecticut Region
Plan of Conservation and Development
Generalized Land Use
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BERLIN
State of Connecticut
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Commercial
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Industrial
Instutional
Parks & Open Space
Residential
Transportation
Utility
Vacant
Waterbody
Map Prepared by: CCRPA
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Data Sources:
-CCRPA GIS Database
-Connecticut DEP
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Economic Development

Introduction

The transition from a largely industrial economy toward more diversified activity in specialized manufacturing, commercial, and professional office, noted in the 1993 Regional Plan of Development is continuing at this update.

Employment and Income

The economy in transition is illustrated in the following table of employment by economic sector in 2000.

Employment by Sector - 2000

	Berlin	Bristol	Burlington	New Britain	Plainville	Southington	Plymouth
Total	9,648	31,219	4,540	31,749	9,416	21,415	6,087
Male	5,007	16,134	2,436	16,029	4,908	11,187	3,177
Management, professional, and related	1,859	4,061	1,250	3,686	1,372	4,003	821
Service	426	1,724	112	2,608	582	1,220	339
Sales and office	1,001	3,031	456	2,803	911	2,031	406
Farming, fishing, and forestry	53	17	0	50	7	28	0
Construction, extraction, and maintenance	785	3,032	289	2,330	834	1,686	622
Production, transportation, and material moving	883	4,269	329	4,552	1,202	2,219	989
Female	4,641	15,085	2,104	15,720	4,508	10,228	2,910
Management, professional, and related	1,983	4,855	1,185	4,403	1,569	4,121	936
Service	680	2,836	264	3,660	809	1,428	568
Sales and office	1,708	5,722	603	5,191	1,727	3,983	973
Farming, fishing, and forestry	14	15	0	15	20	20	0
Construction, extraction, and maintenance	10	56	21	83	0	32	25
Production, transportation, and material moving	246	1,601	31	2,368	383	644	408

Labor force is sensitive to economic swings and the competitive nature of business, which is made more difficult with increased global mobility of companies. Unemployment percentages compared to state appear below.

Labor Force per Community and Connecticut - 2004			
Community	Employed	Unemployed	Unemployment Rate
Berlin	10,131	434	4.1%
Bristol	31,245	1,807	5.5%
Burlington	4,834	197	3.9%
New Britain	31,445	2,618	7.7%
Plainville	9,393	507	5.1%
Plymouth	6,251	354	5.4%
Southington	22,091	1,041	4.5%
Connecticut	1,709,849	87,512	4.9%

Source: CERC, 2006

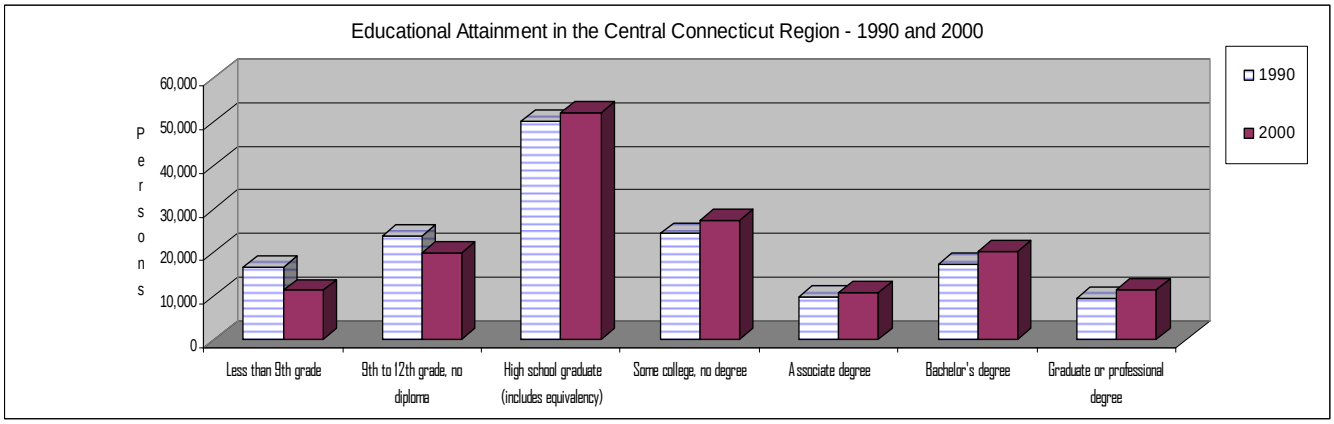
For clarification, a family consists of two or more people (one of whom is the householder) related by birth, marriage, or adoption residing in the same housing unit. In contrast, a household consists of all people who occupy a housing unit regardless of relationship. A household may consist of a person living alone or multiple unrelated individuals or families living together.

Median Family Income - 1999							
Berlin	Bristol	Burlington	New Britain	Plainville	Southington	Plymouth	**Connecticut**
$76,756	$58,259	$87,801	$41,056	$60,586	$70,339	$62,610	$65,521

Source: Census, 2000

Educational Attainment

As the regional employment market shifts toward management and professional job growth, the educational requirements for these positions shift. The following table shows a change toward increased college training.



Source: U.S. Census, 1990 and 2000

Commercial Development

The pattern of regional commercial development reflects historical trends prevalent in Connecticut and much of the United States. Older downtowns and town centers lost their attraction as commercial cores with the onset on strip development along busy corridors that support automobile-oriented trips. However, there has been much interest in downtown revitalization throughout the region to offer distinctly different commercial environments than the strip development that is typical on such corridors as Routes 6 and 10. The common thread in all revitalization efforts is the identification of existing assets that centers possess and building upon them. Most notable among these assets are

Commercial strip development, Route 10, Southington.

historic structures. Historic preservation is working hand-in-hand with economic development at various sites in the region to produce a unique commercial environment that is more supportive of walking, rather than driving. Communities are seeking to augment their commercial strips with pedestrian-friendly, commercial town centers. There is not a move to reject strip development; rather there is a realization of the value of retail market diversification in the communities that have commercial strips. Rural towns in Connecticut, such as Burlington, experience pressures to develop linear commercial corridors instead of compact centers. One of the difficult challenges of revitalizing town centers is that many main streets are also state roads with significant pass-through volumes that may not lend themselves to pedestrian activity.

Plainville Center looking west.

Significant Findings

- ✓ The regional workforce is becoming more diversified with increases in professional and management positions.
- ✓ Workers with more college training have increased in the decade of the 1990s.
- ✓ The central commercial core has become a focal point of redevelopment.
- ✓ Unemployment rates in the cities continue to be high.
- ✓ Municipalities are focused on job creation and retention in attracting businesses.

Transportation, Infrastructure and Facilities

Introduction

The function of transportation in the region is integrated and interdependent on the other focus areas of the plan. The transportation network should support economic development, land use and environmental goals. The street in this regard should be viewed as a "place," a component of the neighborhood. Infrastructure and facilities have profound implications in terms of future land use and need to be thoughtfully planned for the long term. Like transportation, the infrastructure of water supply, sewers, waste management, health care, and energy serve as the underpinnings for a livable society.

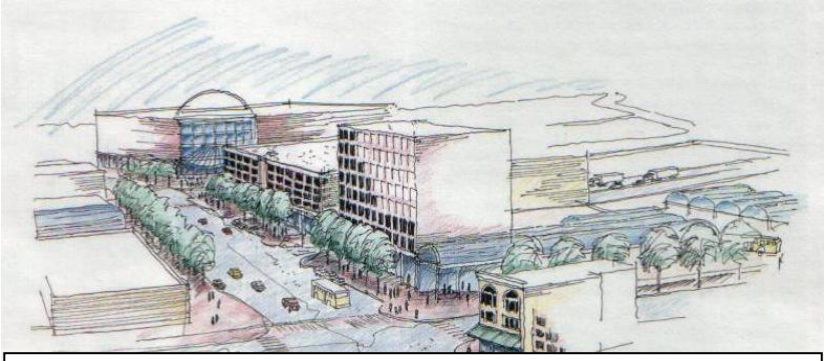
Transportation

The regional transportation network is composed of modes (cars, buses, pedestrians, trains, etc.) and facilities (roads, sidewalks, tracks, etc.). As the designated Metropolitan Planning Organization (MPO) for the central Connecticut region, the CCRPA is responsible for transportation planning. CCRPA is required to produce a long-range transportation plan (LRTP) every four years by the United States Department of Transportation. The CCRPA's theme for the LRTP is "striving for balance." The thrust of this theme is that there is a modal imbalance in the region. An over reliance on automobile use for all trips is both a cause and effect of sprawl development that is proving costly in a number of areas. However, the private automobile will not be replaced within the timeframe of this plan, and providing a system of roads is necessary, not only for cars, but for buses and trucks. Bicycles and pedestrians also share the street network.

The roadway system ranges from higher capacity, higher speed facilities with limited access such as Interstate 84, and Routes 9 and 72, to local residential streets. Route 72 is planned and programmed to extend into Bristol with a limited access segment. This extension will provide direct linkage with Interstate 84.

Major arterials in the region are state or federally numbered roads serving the entire gamut of land uses. Such long-distance, multi-town roads include U.S. Route 6 in Bristol and Plymouth; Route 372 in Berlin, New Britain, Plainville and Bristol (renumbered to Route 72); Route 10 in Plainville and Southington; and, Route 229 in Bristol and Southington. These major arterials pump vital support to the commercial activity in way of delivering freight and customers. The major arterials were once the primary commute routes into employment centers like Hartford, before the limited access highway system was built. The arterials remain heavily used in job commutation, especially in the east/west directions in the region, and as collectors for the highways. Congestion, and its accompanying problems of air pollution, safety and lost productivity, continues as the primary concern in transportation planning, as it was with the region's last update of this plan in 1993.

To a large extent, the strategy of combating congestion by adding capacity to arterials and highways has become unworkable, because the capacity gains are short-term and the costs have skyrocketed. Increasingly, more workable, long-term efforts to decrease congestion concentrate on the demand side of the issue. The fixed-route bus system in the region operates in four towns for



Conceptual rendering of the downtown New Britain station for the Busway with adjacent development.

local transportation. Additionally, commuter buses operate to transport commuters to Hartford. The dispersion of employment centers to suburban locations impacts the effectiveness of the transit system, and encourages proliferation of single occupancy vehicles (SOV). A major project aimed at stemming congestion is the New Britain Hartford Busway, a 9 mile roadway designated for buses only. The Busway will also serve as a conduit for commuter and local fixed route buses to travel between the two cities and towns in between.

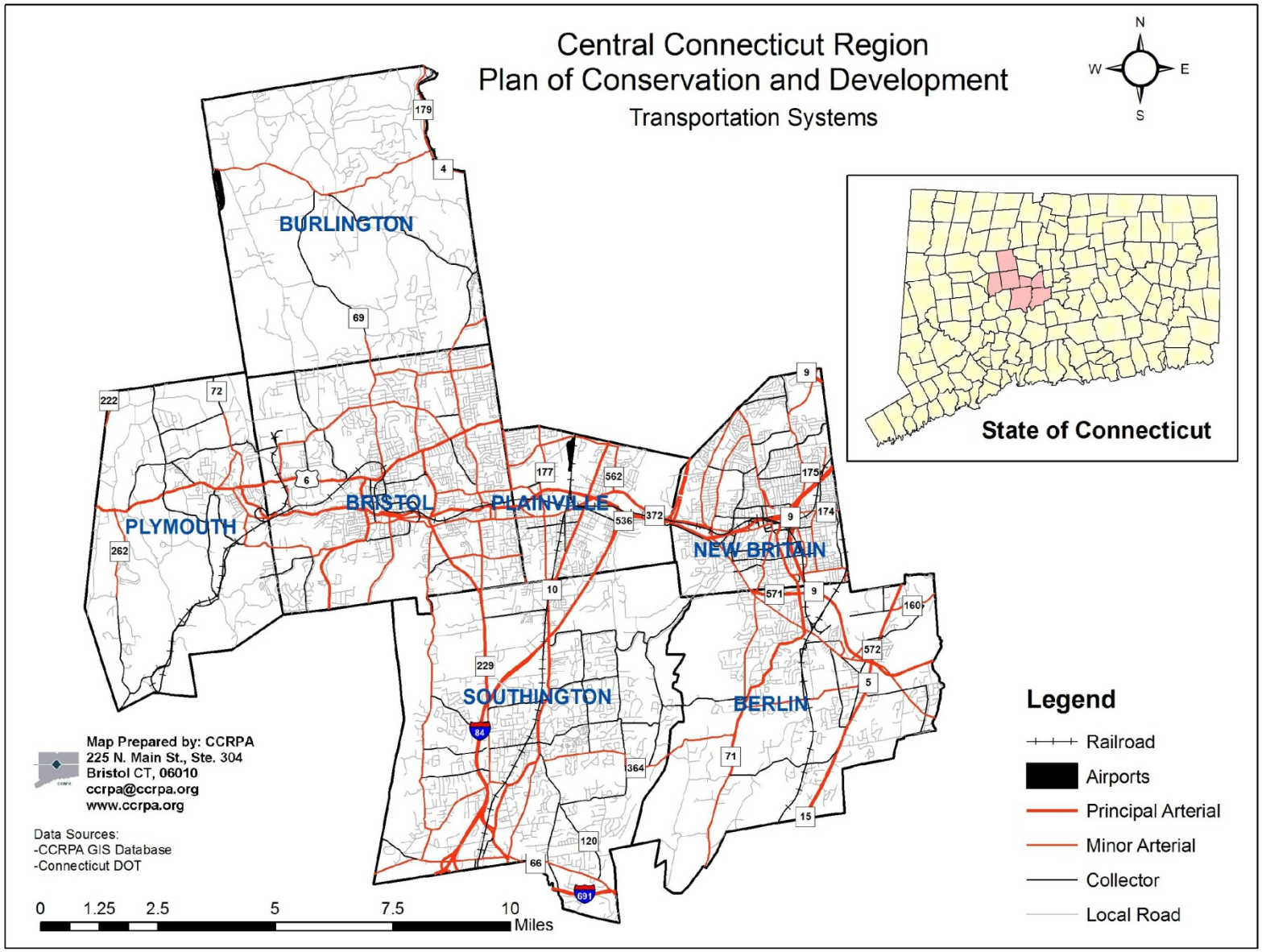
Maximizing pedestrian activity is another strategy to curtain congestion and has added benefits for cardio-vascular health. Along with the automobile, there is no other transportation mode more convenient than walking. The implementation of pedestrian-friendly infrastructure requires integration of land use and transportation planning. The scale of the built environment must be sized for the pedestrian – structures, signage, sidewalks and road crossings. Zoning requirements and building standards particular to the needs of pedestrians must be incorporated into the local land use regulations.

According to the 2000 U.S Census, 84.66% of workers in the region drove alone to work, 2.42% walked, 1.60% worked at home, and 1.33% took transit.

Transportation and Infrastructure Impacts of Regional Build-Out

Increased population will affect traffic. Single-occupancy vehicles per household are based on average number of vehicles for that community from Census 2000 data multiplied by the household increases produced in each build-out scenario. In a general sense, trip generation can be estimated by applying the values utilized by the ConnDOT (10 trips daily for single-family homes). The RBOA does not assign trips to specific routes.

Municipality	**Additional Vehicles per Build-Out Scenario**		
	25%	50%	70%
Berlin	693	1,129	1,516
Bristol	2,341	3,363	4,291
Burlington	1,996	3,402	4,578
New Britain	661	829	991
Plainville	738	1,272	1,672
Plymouth	2,162	3,821	5,225
Southington	4,196	5,551	6,813
Central Connecticut Region	12,787	19,367	25,086


Central Connecticut Region
Plan of Conservation and Development
Transportation Systems
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BURLINGTON
PLYMOUTH
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PLAINVILLE
NEW BRITAIN
SOUTHINGTON
BERLIN
State of Connecticut
Legend
Railroad
Airports
Principal Arterial
Minor Arterial
Collector
Local Road
Map Prepared by: CCRPA
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Bristol CT, 06010
ccrpa@ccrpa.org
www.ccrpa.org
Data Sources:
-CCRPA GIS Database
-Connecticut DOT
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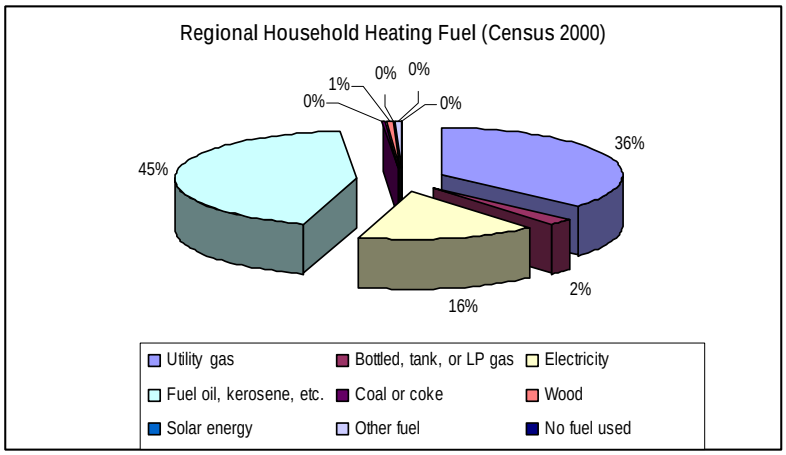
Energy

The energy profile of the region has a profound influence upon the economy, environment and health of central Connecticut. The chart below segregates heating fuels by type in use by households. This data reveals a dependence on traditional sources of fuel for heating homes (oil, gas and electric account for 99% of all fuel types used). According to the Energy Information Administration (EIA), fuel oil is the main heating fuel in New England, utilized by 5.3 million households. It is also the most common fuel used by commercial buildings as reported by EIA. Median energy expenditures by householders in New England were $1,569 in 1997. The 2006 Connecticut Energy Plan targets a 10% reduction in peak electric demand and fossil fuel use by 2010.



A dependence on traditional energy sources in the region leaves residents vulnerable to fluctuations in costs for fuel which are transferred by producers to consumers. Along with the search for new sources of energy, conservation plays a key role in efforts to reduce energy costs.

According to the 2000 U.S. Census, only 9 households out of 89,997 regionwide used solar primarily for heating, all of which were in Plainville. A total of 117 households in the region reported no fuels used.

Water Supply, Sewers and Build-Out Impacts

Potable water is supplied in the region by private wells, and public wells and reservoirs. While water supply and demand data are available from public suppliers of water, private well information is generally inferred.

A water-related impact of future build-out involves household consumption of potable water. As the population of each community increases, the additional households will put pressure on water resources, both public and private. Per capita water usage is estimated at 77 gallons per day (gpd). The increases in population estimated by the build out process will stress water resources.

	Water Demand (Gallons per Day) per Build-Out Scenario		
Municipality	25%	50%	70%
Berlin	77,373	126,008	169,217
Bristol	249,168	357,919	456,718
Burlington	215,169	366,736	493,508
New Britain	88,316	110,769	132,474
Plainville	80,933	139,570	183,460
Plymouth	234,892	415,216	567,769
Southington	459,487	607,918	746,099

Public water systems have been established in areas of the region that are most intensely developed. There are developmental pressures on the communities of Burlington and Plymouth for expansion of residential subdivisions where private wells would be utilized. Residentially zoned areas of Plymouth, just west, north and south of what is considered the Terryville section of town, are indicated as growth areas in the Conservation and Development Policies Plan for Connecticut map (reproduced on page 3 of this Plan). Such areas should be expected to utilize public supplies of potable water. However, the recent emergency extension of water to the densely populated Fall Mountain Lake area has opened up areas of the state map deemed rural lands for development, by virtue of the trunk line to the lake area from Terryville. The Connecticut Water Company's Water Supply Plan of May 2000 indicated that the Lake Plymouth area would need public water by 2020, requiring additional construction of water lines.

Burlington has the least amount of public water supply lines and will most likely develop at much lower densities than those found elsewhere in the region, largely because of the lack of a public water system. The state has no growth areas indicated in Burlington.

Sewers - The availability of a public sewer system greatly enhances a community's ability to sustain more intensive development. The service areas of such systems need to be distributed judiciously, since they impact developmental potential, sprawl and density. The three sewage treatment plants in the region (Plymouth, Bristol and Plainville) discharge treated effluent to the Pequabuck River, a low flow waterway. The plants must provide a tertiary level of treatment since the low flow of the river typically is inadequate to provide enough mixing with treated effluent to sufficiently disperse pollutants. Nevertheless, the treatment plants contribute to sustain the river's flow, counteracting some of the water diversions that are permitted for the watershed. Instead of a municipal system, the Town of Berlin belongs to the Mattabesset District, which treats sewage from several communities. Small sections of Burlington tap into the Farmington sewer system (Lake Garda neighborhood) and the Canton system (the extreme northeastern section of town).

Waste Management

For public health and environmental reasons, the practice of open dumping and burning of solid waste at the municipal level ended in the 1970s. The Federal Resource Conservation and Recovery Act of 1976 prohibited all open dumping by 1984, which shifted the management of household waste in central Connecticut to a regional organization with local membership and cooperation. Since 1988, the Bristol Resource Recovery Facility Operating Committee (BRRFOC), with 14 member communities (including all of CCRPA's member municipalities), has operated and administered an integrated solid waste disposal program. The Bristol facility contains a trash-to-energy plant and burns approximately 650 tons of solid waste daily, under safe and efficient conditions, reducing the volume of waste by 90% in member communities[2].

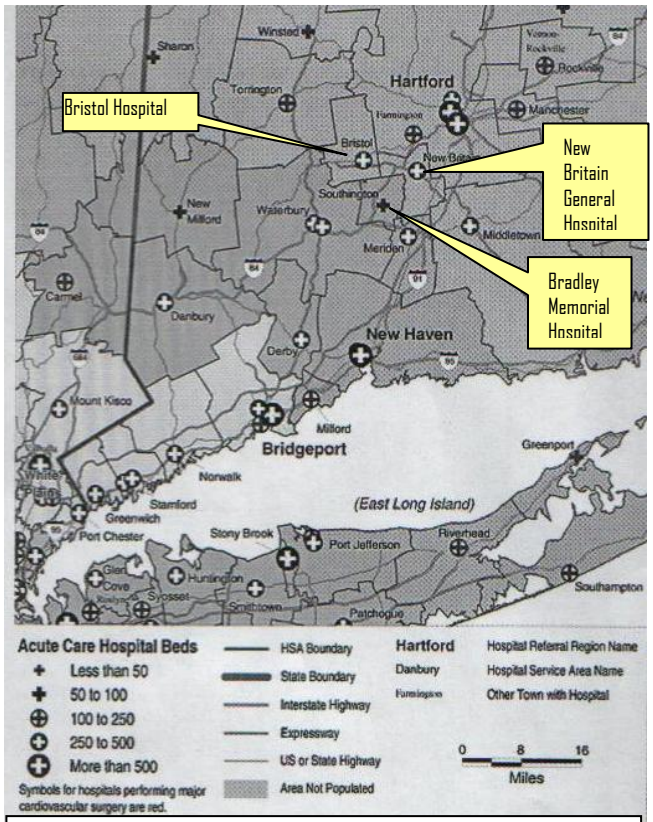
[2] BRRFOC Information, http://www.brrfoc.org/about_brrfoc.htm, accessed 11/9/06

Hospitals

The region is served by three hospitals with acute care hospital beds: Bristol Hospital, Hospital of Central Connecticut (New Britain General Hospital and Bradley Memorial Hospital). Additional major facilities, as listed by the Connecticut Hospital Association, are the rehabilitation facilities at the Bristol Hospital Wellness Center and Hospital for Special Care. The service areas of Bristol Hospital include Bristol, Burlington, Plymouth and Thomaston. The service area of New Britain General Hospital includes New Britain, Plainville, and Berlin. Bradley Memorial Hospital's service area includes Southington. The peripheral medical services, supplies and equipment that develop around the hospitals constitute an economic cluster.

Significant Findings

- ✓ Long-term regional infrastructure component expansion is not a coordinated, integrated process.
- ✓ Transit use lags behind single occupancy vehicle (SOVs) use and walking as modes of choice, based primarily on convenience.
- ✓ The region is over dependent upon traditional, nonrenewable, imported energy.
- ✓ Build-out scenarios of greater water demand reveal future strains on resources for potable water if projections are realized.
- ✓ Build-out scenarios illustrate increases in single occupancy vehicle ownership, which could increase negative impacts to the natural environment and resources.



Source: The Dartmouth Atlas of Health Care (2005)

Housing

Introduction

Housing is one of the basic foundations of society. In the central Connecticut region, there is wide variety of housing types. Housing is the major expense for citizens of the region, and its availability for a wide range of incomes is critical to the preservation of neighborhoods, workforce availability and the cohesiveness of families. While there is certainly variety on a regional scale, a review of individual communities reveals disparities within municipal borders that indicate a lack of balance.

Housing Stock

The consideration of housing stock in the region is an important measure of the variety in each town for certain types of housing. The table below indicates a regional balance of owner/renter occupied housing, but unbalanced types of housing per community.

Geographic Area	Occupied Housing Units	Specified Owner-Occupied Units (% of Occupied Units)	Median Value
Berlin	6,792	5,497 (80.93%)	$ 171,300
Bristol	24,886	12,919 (51.91%)	$ 129,300
Burlington	2,840	2,415 (85.04%)	$ 199,900
New Britain	28,558	8,423 (29.49%)	$ 96,900
Plainville	7,385	4,313 (58.40%)	$ 128,100
Plymouth	4,453	2,974 (66.79%)	$ 124,000
Southington	15,083	10,746 (71.25%)	$ 164,500
Region	89,997	47,287 (55.95%)	$ 144,857

Source: U.S. Census (2000)

Housing starts in the form of new permits varies around the region, reflecting a lack of developable land in the mature urban centers versus the newer suburban towns with substantially more raw land for development.

Municipality	Total Housing Unit Authorizations, 2001 To 2004	Single Family Housing Unit Authorizations,2001 To 2004	Percentage Single Family to Overall Permits	Housing Units Total, 2000	Permits as Percentage of Existing Housing Units
Berlin	472	363	77%	6,955	6.8%
Bristol	642	492	77%	26,125	2.5%
Burlington	263	239	91%	2,901	9.1%
New Britain	143	127	89%	31,164	0.5%
Plainville	128	122	95%	7,707	1.7%
Plymouth	195	169	87%	4,646	4.2%
Southington	747	718	96%	15,557	4.8%
Region	2,590	2,230	86%	95,055	2.7%

Source: Connecticut Dept. of Economic & Community Development – Annual Construction Report Excel Tables Years 2001 to 2004 and U. S. Census Bureau – 2000 Census

Affordable Housing

The Connecticut General Statutes exempt municipalities from certain requirements to provide affordable housing, if the town has 10% or more of its housing units classified as "affordable." Connecticut defines affordable housing as that for which individuals and families pay 30% or less of their annual income where such income is less than or equal to the area median income for the municipality in which the housing is located. This determination is provided the by federal Department of Housing and Urban Development (HUD). For the purpose of determining municipal exemption from the requirement to provide affordable housing, the state includes housing that is assisted by a governmental program, such as subsidized units, homes with mortgages from the Connecticut Housing Finance Authority (CHFA) or the Farmers Home Administration (FMHA), and deed-restricted units. This housing must be restricted to low or moderate income individuals or families as defined by the income eligibility rules of the governmental program providing the financial assistance.

There are slightly different approaches to the definition of affordability between HUD and the State of Connecticut. HUD and the local housing authorities that it supports use income to determine if a family or individual qualifies for federal and state housing assistance based on income data from the most recent U.S. Census. The state determines whether housing units themselves are affordable using the criteria established under the various governmental programs that support those units. However, the state does not count as "affordable" any housing units that fall outside the definition stated in the previous paragraph. This would include the relatively inexpensive market-rate housing, such as mobile homes, certain condominiums and detached houses in generally "undesirable" locations or which are substandard to some degree.

Municipality	2000 Census Housing Units	Governmentally Assisted Units	CHFA/FMHA Mortgages	Deed Restricted	Total Assisted	Percent of Affordable Housing
Towns which are exempt under Section 8-30g CGS						
Bristol	26,125	3,421	909	6	4,336	16.60%
New Britain	31,164	4,164	1,125	3	5,292	16.98%
Towns which are not exempt under Section 8-30g CGS						
Berlin	6,955	202	49	21	272	3.91%
Burlington	2,901	30	22	0	52	1.79%
Plainville	7,707	238	286	32	556	7.21%
Plymouth	4,646	181	141	0	322	6.93%
Southington	15,557	663	240	11	914	5.88%

Source: Connecticut Department of Economic Development, 2005 Affordable Housing Appeals List. http://www.ct.gov/ecd/cwp/view.asp?a=1098&Q=249724&ecdNav=

The values of maintaining a stock of housing for low and moderate income families and individuals cut across many components of a community. For example, if workers cannot afford to live in the towns in which they work, more rural towns will be sought after for less expensive housing. This situation extends commuting time, adds to congestion, promotes sprawl and can destabilize neighborhoods.

Historic home on Main Street, Terryville section of Plymouth.

Housing Trends

Trends in housing vary throughout the region, and a number of trends can be found in certain communities. The common thread in each community that drives building activity in housing is market demand. The region's cities

and towns cannot control the market, but can tailor zoning and subdivision regulations to invite certain housing types to certain parts of the community. An increase in housing types to suit elderly populations, such as assisted living facilities, is valuable in many communities, but must weighed against realistic demand for such housing.

Build-Out Implications for Housing

The Regional Build-Out Analysis (RBOA) estimates the number of housing units established based on zoning regulations in effect that govern setbacks, minimum lot sizes, and maximum lot coverage. The table below estimates new units per percentage of build out. The RBOA assumes conventional subdivision development based on local regulations in force, without factoring in cluster development or open space subdivisions.

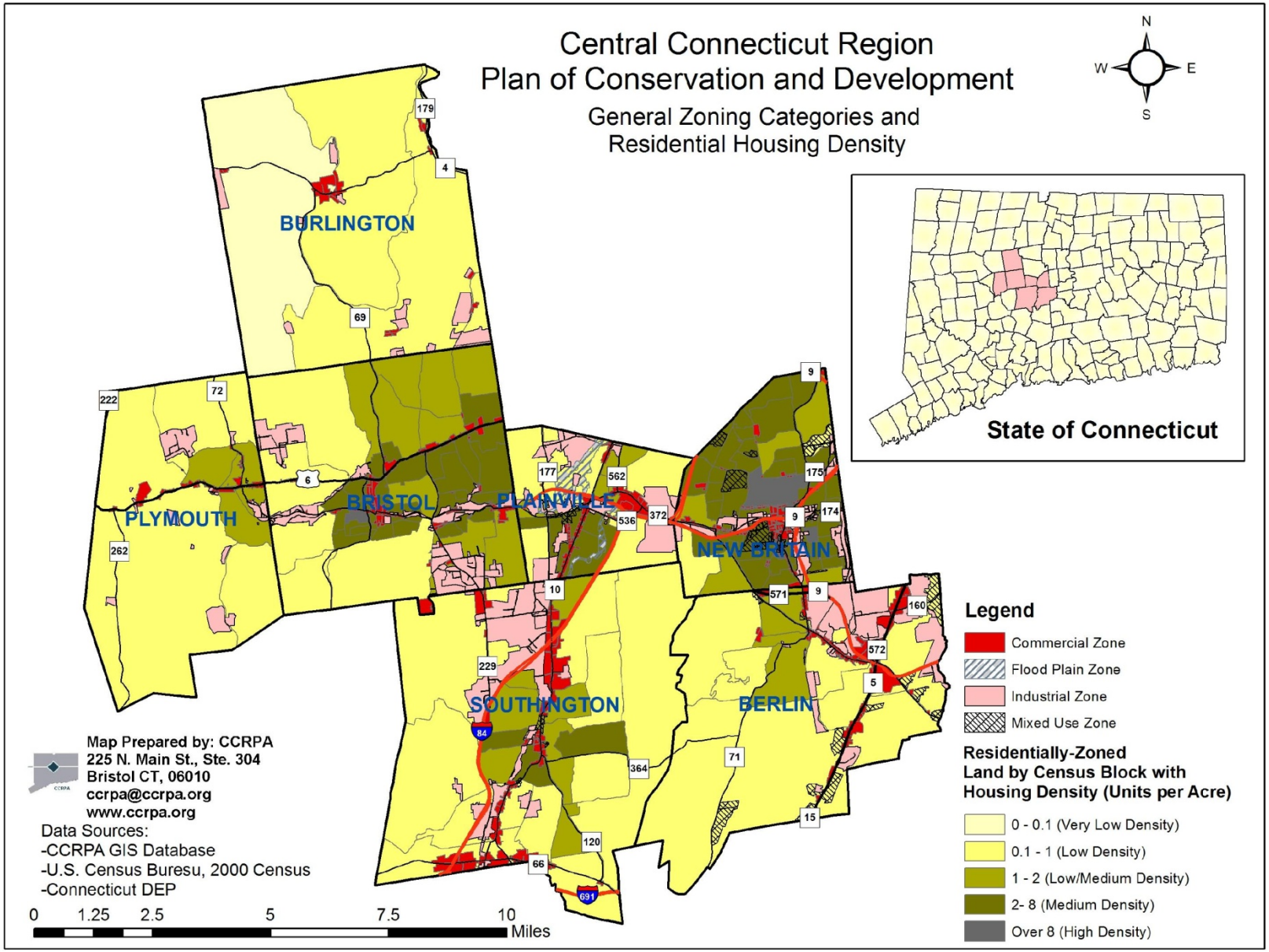
	Estimated New Dwelling Units per Build-Out Scenario		
Municipality	25%	50%	70%
Berlin	385	627	842
Bristol	1,377	1,978	2,524
Burlington	988	1,701	2,289
New Britain	472	592	708
Plainville	461	795	1,045
Plymouth	1,201	2,123	2,903
Southington	2,331	3,084	3,785

The vast majority of available land for development is zoned residential; although, there are some commercially and industrially zoned lands. Following the same protocol for units derived from zoning regulations, there are some implications in terms of job creation by the build-out of commercial and industrial land. The pace of such development is historically slower than that of residential development, but it can be noted that there is significant floor area available for commercial and industrial development.

In 2000 and 1999, Southington was third among all towns in Connecticut in housing permits

Significant Findings

- ✓ While the equation of homeowners versus renters is balanced regionally, some communities are not in equilibrium.
- ✓ New single-family home building has experienced a boom in the years between regional plans.
- ✓ A narrow state definition of what qualifies as affordable homes has hampered communities in efforts to meet the 10% affordable threshold.
- ✓ Various forms of senior housing are being built throughout the region.
- ✓ Regionwide, there is a potential for significant construction of new homes, even at a 25% build-out scenario.


Central Connecticut Region
Plan of Conservation and Development
General Zoning Categories and
Residential Housing Density
N
W
E
S
BURLINGTON
PLYMOUTH
BRISTOL
PLAINVILLE
NEW BRITAIN
SOUTHINGTON
BERLIN
State of Connecticut
Legend
Commercial Zone
Flood Plain Zone
Industrial Zone
Mixed Use Zone
Residentially-Zoned
Land by Census Block with
Housing Density (Units per Acre)
0 - 0.1 (Very Low Density)
0.1 - 1 (Low Density)
1 - 2 (Low/Medium Density)
2- 8 (Medium Density)
Over 8 (High Density)
Map Prepared by: CCRPA
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ccrpa@ccrpa.org
www.ccrpa.org
Data Sources:
-CCRPA GIS Database
-U.S. Census Buresu, 2000 Census
-Connecticut DEP
0 1.25 2.5 5 7.5 10
Miles

Natural Resources and Open Space

Introduction

The natural resources of the region are the underpinnings of the successful communities that exist there. Without abundant clean air and water, the communities could suffer irreparable harm. The area's parks and open space provide recreation and natural functions, respectively, that add greatly to the livability of the region.

Water Resources

Horseshoe Falls section the Pequabuck River in Plymouth.

Much of the early settlement of the region was dependent on rivers for sources of potable water and for the power to run early industries. Rivers also became important for modern industries to receive industrial waste water and to provide water for industrial cooling and processing. The alteration of watershed dynamics had negative side effects on water quality that eliminated waterways as valuable sources of potable water.

Just in the latter part of the last century has there been a new awareness of the costs of water pollution to all segments of society. The vital ecological functions of inland wetlands have become widely acknowledged and protected. The value of rivers and lakes for their roles in the environmental, economic and recreational life of each community in the region is becoming more understood and appreciated.

The Pequabuck River Watershed Management Plan (2005) contains strategies for watershed preservation that can be implemented by municipalities and individuals in any watershed.

Aquifers

One of the most extensive groundwater aquifers in the state of Connecticut bisects the region in a north/south direction. The aquifer, whose surficial geology is composed of layered deposits of sand, gravel, silt and clay (stratified drift), is a major source of clean, potable water for water companies in the region, in addition to the surface reservoirs scattered around central Connecticut. The aquifer is capable of significant yields, sometimes millions of gallons per day where deep saturated deposits of porous materials are found.

Groundwater aquifers are capable of being recharged by rainwater percolating through the soil. However, in built up areas of impervious surface, recharge is limited. Of great importance is the prevention of pollution from entering the aquifer. The Aquifer Protection Program (CGS, Section 22a-354a et. Sec.) was enacted to help protect this valuable resource from potential damage inflicted by certain land uses above the aquifer. The Aquifer Protection Program (APP) requires registration of certain land uses with the municipality and restricts expansion of those land uses in some degree. Certain land uses are banned from the aquifer protection area.

Air Quality

The CCRPA has particular concern over the air quality of the region. As the Metropolitan Planning Organization (MPO), the CCRPA utilizes a variety of federal funds for transportation planning and programming. In this function, all plans, programs and projects carry a mandated responsibility to address motor vehicle emissions, air pollution's primary cause. Gasoline powered vehicles and emissions from all types of structures produce nitric oxide, sulfuric oxide, ozone and particulate matter

that cause respiratory ailments and add to ground and surface water degradation. Traffic congestion compounds the vehicle emissions problem.

The CCRPA has also undertaken efforts to curb greenhouse gas (GHG) emissions by advising municipalities regarding their energy use decisions, and by adoption of the Connecticut Clean Cities initiative. GHG emissions, such as carbon dioxide, contribute to global warming and sea level rise.

Ridgelines

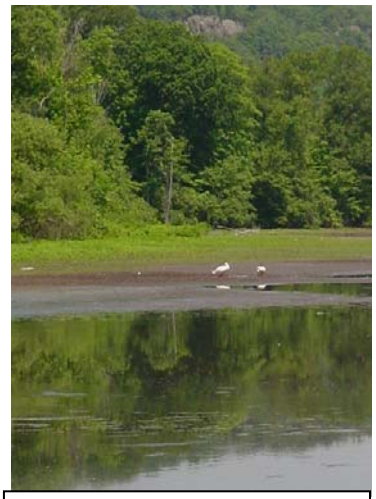
The geology of the central Connecticut region is noteworthy as one of the areas where the Central Valley meets the Western Uplands, two of the major four geologic classifications in Connecticut. The preeminent geologic feature of the region is the 75-mile Metacomet Ridge, a remnant of Connecticut's volcanic past. The Metacomet Ridge is the most prominent of several traprock ridges in Connecticut, which are conspicuous for their north-south orientation and for gently sloping east faces and steep, sheer-rock west faces. Traprock is basalt, a dense igneous rock that is resistant to erosion.

The ridgelines in the region offer beautiful vistas from their summits. The ridgelines also provide a viewshed from surrounding lowlands of forested summits and massive rock cliffs. The Metacomet Trail, a major pathway of Connecticut's Blue-Blazed Trail System, follows the long ridge through Berlin, Southington and Plainville, and offers the hiking public access to a unique environment with its own variety of flora and fauna. Development of ridges for subdivisions interrupts the natural appearance of the viewshed and can diminish opportunities for public access. Several towns have endorsed the Metacomet Compact, a nonbinding document created to preserve the ridgelines and their viewsheds for the public. Ridgeline protection regulations are in force in several towns with limits on clearcutting and disturbance of ridge buffer zones.

The traprock ridges also are an important economic asset as a prime source of crushed stone, Connecticut's most valuable mineral resource. The stone is crucial to most construction operations. Six quarries are cently operating in the state. The Cooke's Gap section of Plainville is home to traprock quarries in the central Connecticut region. The economic resource presented by traprock ridges sometimes conflicts with other ridgeline interests.

Open Space, Parks and Recreation

Open space can achieve a variety of positive goals on the local and regional levels. Open space contributes to the environmental health of watersheds by providing extended areas for recharge of groundwater aquifers, free of impervious surfaces. They also act as sediment and pollutant traps for runoff before stormwater reaches streams and rivers. Open space can reduce flooding severity by providing a holding area for flood water and as an intercept for stormwater to percolate into the soil. Wildlife habitat is also enhanced through open space acquisition, especially when open space is linked to create wildlife corridors.



Hart Ponds from trail in Timberlin Park, Berlin.

There are economic benefits to open space. While there are no property tax revenues realized by municipalities from open space, there are no expenditures either. Residential property adjacent to open space benefits from the provision of a neighborhood buffer and visual relief from nearby development, adding to value.

In many instances, open space provides hiking trails that affords

neighborhoods the opportunity for exercise, pedestrian transportation and experiencing nature.

There are substantial amounts of open space in private ownership. Chief among these private owners are water companies, which own watershed lands. Declassification of water company land to Class II or III can lead to sales of these properties for development purposes. The same is true for farmland. In both cases, a loss of significant open space can result. Delays of sale for municipal consideration are helpful, but often the amount of time allowed for towns to decide to purchase open space is inadequate.

The State of Connecticut Open Space Grant Program offers a cost sharing for the acquisition and establishment of permanent open space to municipalities, land trusts and water companies. Several communities in the region have taken advantage of these grants. The open space sites must remain undeveloped, except for passive recreation.

Although parks have definite local positive impacts, a number of parks in the region attract visitors from beyond town boundaries. Many communities in the state share the recreational amenities of their park systems with neighboring towns.

The Connecticut DEP prepared a Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2005-2010 (September 2005) that compiled a database of recreational facilities per town. The database collected information from municipal sources. The DEP termed these facilities "discrete identifiable recreational places" (DIRP). DIRPs can be municipal, state, federal, nonprofit or commercial sites.

Outdoor Recreation Site Type	Number in Region	Number Per 10, 000 Residents - Region	Number Per 10, 000 Residents - State
Total Acreage	6,590		
Sites with Restrooms	64		
Sites with Handicap Access	105		
Total Baseball and Softball Fields	59	2.6	2.9
Total Football Fields	11	0.5	0.5
Total Multiuse Fields	38	1.7	1.8
Total Soccer Fields	26	1.1	1.5
Total Basketball Courts	30	1.3	1.9
Total Tennis Courts	27	1.2	1.1
Total Volleyball Courts	7	0.3	0.2
Total Golf Courses	8	0.3	0.4
Sites with Playground Areas	64	2.8	3.1
Sites with Swimming Pool	15	0.7	0.4
Sites with Beach/Pond/Lake Swimming	3	0.1	0.5
Sites with Picnic Areas	21	0.9	2.0
Sites with Fishing Access	25	1.1	2.0
Sites with Boating Access	4	0.8	0.8
Sites with Hunting	3	0.1	0.3
Sites with Camping	2	0.1	0.3
Sites with Trails	32	1.4	2.6
Sites with Winter Sports Access	11	0.5	0.7
Historic or Educational Sites	1	0.0	0.3
Sites with Gardens	1	0.0	0.3

The SCORP conducted user and municipal surveys. National standards were not applied on the state level for facilities per population because they would not give an indication of the distribution of

facilities. Results were also stratified across socio-economic groupings of towns representing the "five Connecticuts", as identified by the Center for Population Research at the University of Connecticut. The Center divided communities into: wealthy, suburban, rural, urban periphery, and urban core. The results indicated that rural and suburban communities had higher number of sites per population, than did the urban sites. Many of the listed facilities require a substantial amount of space, a major limiting factor in urban areas. For example, even though New Britain has four more baseball fields than Burlington, the urban area (New Britain) has 1.4 fields per 10,000 residents. Burlington (listed as a suburban area) has 7.1 fields per 10,000 residents.

Since the date of the last update of CCRPA's Regional Plan, the development of new community parks has slowed because of the diminished stock of available land and the great increase in cost of this land. However, the establishment and popularity of linear parks and pocket parks has multiplied. Those parks represent a lesser financial outlay for land and equipment than do traditional parks, but they still offer opportunities for exercise and relaxation.

Impact of Regional Build-Out on Natural Resources and Open Space

Farmington River Trail in

Human development results in the degradation of the quality of natural resources – land, water and air. Mitigating those environmental impacts can lessen their severity. As natural land is developed, the amount of pervious surface is altered. Structures and infrastructure, such as roads and utilities, require covering soil with nonporous materials. If rainfall and snowmelt cannot percolate through the soil, it becomes runoff, in search of a pervious surface or a waterway, often picking up pollutants on its way. It follows logically then that a build-out scenario implies environmental impacts based on the increase of impervious surface. The build-out analysis done by the CCRPA assumes no manufactured drainage facilities that normally accompany development activity.

The following is from the "Pequabuck River State of the Watershed Report (July 2004): "Impervious surfaces in a watershed adversely impact the health of the watershed. These effects include adverse impacts on water quantity, degraded water quality, changes to habitat, diminished stream and landscape aesthetics, bank erosion and flash floods. Similarly, impervious surfaces dramatically increase peak discharges during storm or snowmelt events, resulting in the increased flow and possible downstream flooding. According to different studies, biological integrity and habitat quality of streams are inversely affected by the amounts of impervious surfaces adjacent to them (Arnold & Gibbons1996; Klein1979; Schueler1994). A watershed is considered to be impacted when the impervious surface exceeds 10% of the total watershed (Schueler 1994)."

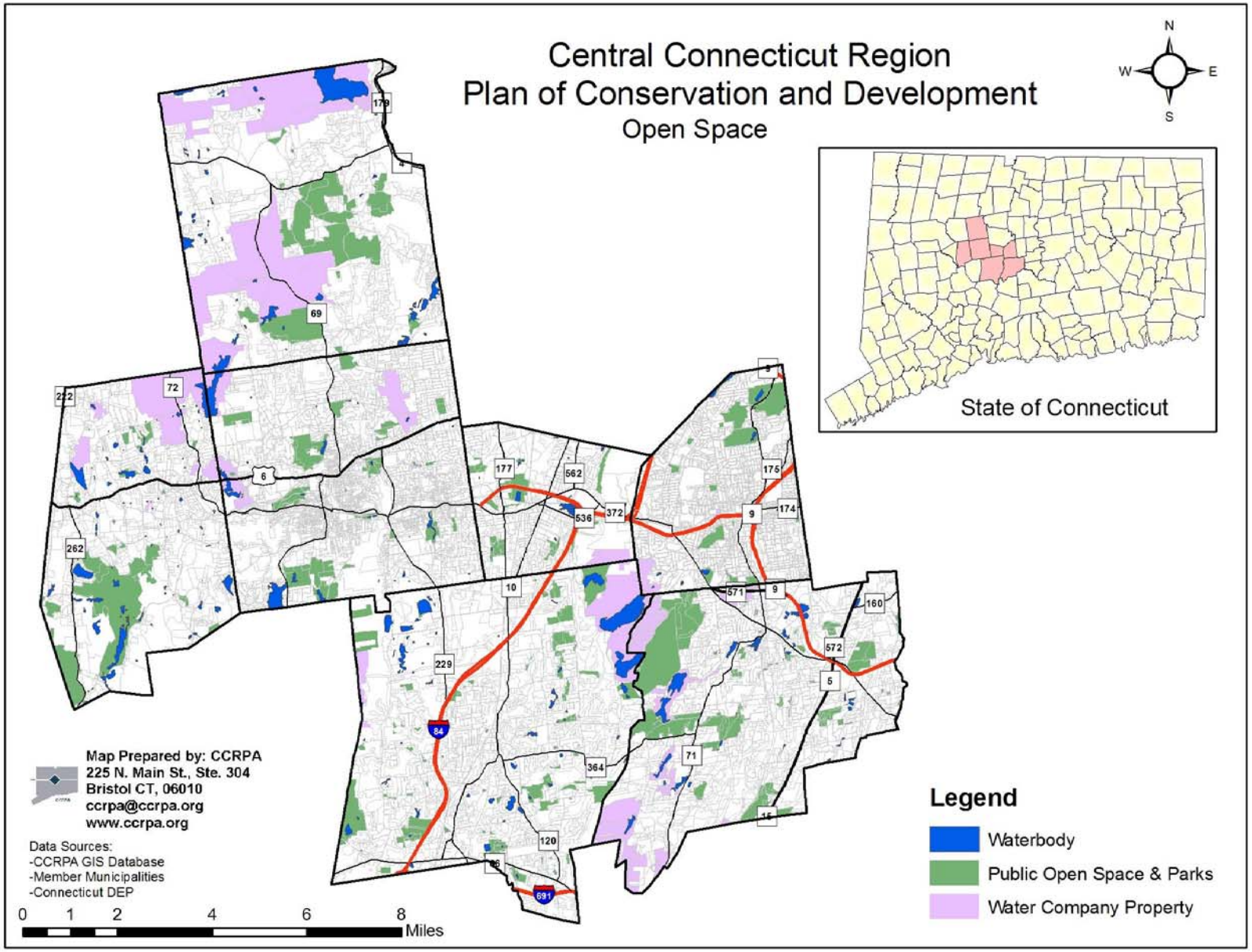
The following table lists subregional watersheds in the central Connecticut region and the percentages of increased impervious surface caused by the development that accompanies build out of available raw land. Figures in bold represent the "impacted" threshold of 10% or above. Impervious percentages of 25% (highlighted in boxes) or greater are indicative of watersheds that will experience "degraded" streams caused by polluted runoff.

SUBREGIONAL BASIN	Central Connecticut Regional Contribution to the Total Basin Imperviousness			
	Existing	With 25 Percent Buildout	With 50 Percent Buildout	With 70 Percent Buildout
Bass Brook	**14.65%**	**14.90%**	**15.15%**	**15.34%**
Belcher Brook	**20.08%**	**21.08%**	**22.08%**	**22.88%**
Burlington Brook	**13.63%**	**15.32%**	**17.01%**	**18.37%**
Copper Mine Brook	**18.98%**	**20.07%**	**21.16%**	**22.03%**
Eightmile River	**16.49%**	**18.18%**	**19.88%**	**21.23%**
Farmington River	0.24%	0.31%	0.37%	0.42%
Hancock Brook	8.76%	**10.87%**	**12.99%**	**14.68%**
Leadmine Brook	0.78%	1.03%	1.29%	1.50%
Mad River	0.52%	0.53%	0.54%	0.55%
Mattabesset River	9.88%	**10.42%**	**10.96%**	**11.40%**
Misery Brook	**21.29%**	**22.93%**	**24.56%**	**25.87%**
Naugatuck River	0.54%	0.71%	0.87%	1.01%
Nepaug River	0.57%	0.65%	0.73%	0.79%
Pequabuck River	**22.61%**	**23.58%**	**24.56%**	**25.34%**
Piper Brook	9.69%	9.77%	9.84%	9.90%
Poland River	5.19%	6.18%	7.17%	7.96%
Quinnipiac River	9.49%	**10.15%**	**10.80%**	**11.32%**
Rock Brook	0.03%	0.04%	0.04%	0.04%
Sodom Brook	1.60%	1.83%	2.06%	2.25%
Tenmile River	3.51%	3.98%	4.46%	4.83%
Webster Brook	**11.78%**	**11.87%**	**11.95%**	**12.02%**
Willow Brook	**28.45%**	**29.60%**	**30.76%**	**31.68%**
Total	5.77%	6.20%	6.63%	6.97%

With diminished capacity for flood storage by the soil, runoff volumes can exceed what the floodway can handle. Flood mitigation strategies should take into account the amount of impervious surface throughout the watersheds in question.

Significant Findings

- ✓ Increases in impervious surface are having adverse effects on watershed dynamics.
- ✓ Linear parks are offering recreational opportunities as the number of new large parks diminishes.
- ✓ The multiple values of municipal open space are increasingly recognized regionwide.
- ✓ The Region's valuable and unique ridges are the site of competing interests.
- ✓ The region's rivers are an underutilized resource.
- ✓ The maximization of alternative transportation modes is key to air quality improvements.
- ✓ The Region's major aquifer is one of its most vital resources.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Data Sources:
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-Member Municipalities
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0 1 2 4 6 8
Miles
Legend
Waterbody
Public Open Space & Parks
Water Company Property

Emergency Management

Emergency management planning is naturally regional in scope, since most incidents can be multijurisdictional. Through its transportation planning program, the CCRPA has been involved in highway incident management since 1996; however, emergency management now includes terrorism preparedness response, evacuation preparation, planning for consolidated public safety answering points, natural hazard mitigation and strategies for citizens' emergency response teams. Enhancing public safety through planning improves the quality of life for all of the region's citizens.