

Master Plan

Canaan NH

Oct 16, 2019



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I. INTRODUCTION

A. Plan Purpose

1. The purpose of this Master Plan is fourfold. First, the Plan serves as the guiding document for future development in Canaan. As such, it establishes the key principles that the town of Canaan holds related to land use change, and articulates them in a clear, practical and concise manner. Second, the Master Plan serves as the guiding document to assist the Planning Board as it updates Subdivision and other appropriate ordinances and regulations that fall under its jurisdiction. Third, the Master Plan acts as a cornerstone document for any Zoning Ordinance that the town may consider. Finally, the Master Plan serves as the basis for other responsibilities of the board as it strives to preserve and enhance the quality of life of all residents in Canaan.
2. Ultimately, this plan articulates the values and vision that the people of Canaan hold dear. The Plan identifies many of the key issues facing the community, and the concerns that residents have about the future of the town related to land use change and development. This Master Plan acknowledges that personal property rights and the ability of Canaan's private property owners to pursue their goals is now, and will continue to be, a prized community value.
3. With the values and vision of the community clearly defined, the Master Plan also establishes priorities for the Planning Board to consider as it continues its work towards the smart management of growth, sound planning, and wise resource conservation.

B. Authority

1. According to NH RSA 674:1, the Planning Board has the explicit duty to prepare and amend a Master Plan from "time to time". The citizens of Canaan elect six of the seven members of the Planning Board. The seventh, an Ex-Officio member, is a representative of the three member Canaan Select Board. Alternate members may be appointed by the Planning Board. The Canaan Planning Board has prepared and adopted this Master Plan in accordance with the content requirements and adoption procedures outlined in NH RSA 674:2-4.

C. Planning Process

1. The Planning Board decided that in order for the Master Plan to be a success, and truly represent the desires and ambitions of the residents of Canaan, an extensive public involvement process was needed. In

2001 a UNH sponsored “Canaan Community Profile” was created. In 2005 and 2013 Community Surveys were prepared and distributed to Canaan residents and the Planning Board hosted several community forums designed to solicit input from the people of Canaan on a range of issues.

2. The information gathered helped to shape this Master Plan. The results of the 2013 Community Survey are summarized in the appendix and selectively included throughout the document.

D. Acknowledgements

1. The Planning Board would like to thank all those who participated in the development of this Master Plan but most importantly, the citizens of Canaan. Without their participation, this plan would not have been possible. The Planning Board would like to encourage the ongoing participation of all Canaan citizens.

II. VISION FOR CANAAN'S FUTURE

A. Canaan's People

1. Canaan will remain a diverse community with a rural character, growing at a moderate pace. Canaan will be an attractive place to live and work for both new arrivals and the existing residents.

B. The Canaan Economy

1. Canaan Village will be a lively commercial, social and municipal center, with restaurants, stores and medical services. While Canaan will remain primarily a residential community, commercial and industrial opportunities will expand, providing new levels of economic vitality. More people who live in town will also be able to work in town. We will see growth of home industries. Businesses that expand will develop facilities close to major transportation routes, away from residential neighborhoods and valuable natural resources. All new commercial and industrial development will respect the natural landscape, with minimal impact on abutting properties and landowners.

C. Town Buildings and Services

1. The Town of Canaan will remain a safe place to live and visit, with excellent police and fire departments. The Town will maintain its roads well, and residents and Village visitors will value the sidewalks. The Library will be extensively used by people of all ages. The Mascoma Senior Center, the Town Commons, and Town buildings will be focal points for the community, where young and older people come together for recreation and leisure in a variety of ways. Although community facilities and services in Canaan will be more than adequate, they will remain affordable. The school system will continue to provide a high quality education to the youth of the Mascoma Valley. Municipal taxes will not spike as a result of unanticipated capital improvements, but rather the local tax burden will remain relatively predictable into the future.

D. Roads and Transportation System

1. Automobile transportation will remain the dominant mode of travel in Canaan. Canaan will continue to ensure that roadways are as safe as possible for motorists, pedestrians, and cyclists. The Village area will become the focal destination point in Canaan, a walkable and livable community. In rural areas, only those roads that warrant paving will be converted from dirt to asphalt. Traffic calming design characteristics will be integrated into new town road improvements, especially when improving rural town roads. The Town will support and work with

organizations such as the Upper Valley Lake Sunapee Regional Planning Commission and the Upper Valley Transportation Management Association to improve public transportation opportunities to meet the needs of Canaan's changing population.

E. Open Space and Recreation

1. Canaan will be a place where Town residents will get maximum enjoyment from the natural environment. The Town will strengthen protection of its surface waters and will employ exemplary measures to protect river and lake shorelines. The quality of the water in Canaan Street Lake and the aquifer under US 4 will be better protected, ensuring a long-term drinking water source for residents. The shoreline along the Mascoma River will largely be free from development and accessible to the public, particularly along the river where the Northern Rail Trail runs. The rural areas of Canaan will contain low-density residential development among larger areas of forestland and wildlife corridors.

F. Preserving Canaan's History

1. Locations that people cherish will be better protected, and the history of the community will be preserved. Children will gain better understanding and respect the history of Canaan, including its unique educational history and its development from an agricultural economy, to the home of small industries, and now to becoming a residential town. Residents will be proud of community facilities such as the Town Meeting House and the Canaan Historical Museum. Community events such as Old Home Day will continue to draw large crowds, and will remind people that Canaan is a great place to live.

G. Land Use and Housing

1. The Town of Canaan will preserve the rural character that our people cherish so much. Open lands and stone walls will remain scattered throughout the countryside.
2. The Town will continue to have a mix of housing, with our historic frame houses complemented by dwellings of newer construction. New construction will be predominantly in the Village area using its water and sewerage services. Forest and agricultural lands will be further protected, and new subdivisions in town will integrate open space conservation ideals into their design. Clustered development that preserves expanses of undeveloped land will become the norm for the rural areas. Rural roads will remain uncongested, and increased traffic will be accommodated on

the larger roads connecting to the Village as opposed to the country roads elsewhere in town.

H. Natural Resources

1. We will have a high regard for our Town's natural resources. We will value the surface and groundwater resources that make up the ponds, rivers, streams, wetlands, and aquifers. Canaan Street Lake will continue to be a clean source of water, a recreation area and a visual asset for the people of Canaan. We have also been blessed with a significant amount of water frontage along the Town's ponds and the Mascoma River, and the people will support the protection of shorelines and rivers from negative impacts caused by development. The forests of Canaan will be productive for timber harvest, for wildlife habitat, and for hunting and other recreation.

I. Regional Cooperation

1. The Town of Canaan will continue to engage in activities that involve other Mascoma and Upper Valley Communities. Our history of shared education and emergency planning will be models for other joint projects that not only benefit our own residents, but those who live in the greater region. Canaan will work together with its neighbors in seeking regional solutions to the problems of rural life in the 21st century.

III. LAND USE

A. Build-out Analysis

1. Prior to the 2006 Master Plan revision, a build-out analysis was completed. This analysis projects what Canaan's population and housing inventory would be if every buildable site was developed and occupied. That forecast is 28,449 people and 13,645 housing units, which is approximately a seven-fold increase over 2018 numbers. This extreme amount of development is unlikely. However, municipal ordinances should be considered to encourage low density development as a precaution, so that Canaan's rural character may be preserved.

B. Housing Land Uses

1. Guide and direct higher density residential housing in or adjacent to Canaan's village areas, where municipal sewer is available.
2. Outside of Canaan's village areas, discourage development other than farm, forestry, and low-density residential uses.
3. Take measures to reduce flooding in the village and West Canaan. These measures should include prohibiting development in poorly drained soils and construction in the floodplain. Both soils and flood plain absorb stormwater and delay release into flooded rivers. Pursue state and federal funding to implement flood mitigation projects recommended by professional engineers in the field.
4. Develop ordinances to control air, noise and water pollution, thereby improving residential neighborhood quality of life.
5. Establish a minimum shore frontage requirement for new lots created fronting on Canaan's lakes and major ponds and the Mascoma and Indian Rivers, thereby reducing residential pollutants from entering our surface waters.
6. Limit areas of town where multiple dwellings per lot are allowed, such as apartments, mobile home parks, condos, and family compounds. This will preserve open rural landscapes.
7. Accessory Dwelling Unit regulations should be developed to provide in-law-apartments or similar dwelling units in single-family housing sections of town.

8. Require a septic evaluation and a current septic permit for major building projects affecting habitable dwelling space. This will reduce dependence on inadequate septic systems as older homes and summer residences are modified. Conversion of summer camps to full time residences can create septic problems, if not addressed.
9. Remain, over the next fifteen years, primarily a residential community with uncrowded and quiet living conditions, a scenic and unpolluted natural environment, and with suitable services and businesses.
10. Provide the opportunity for a variety of housing types and values including affordable housing.

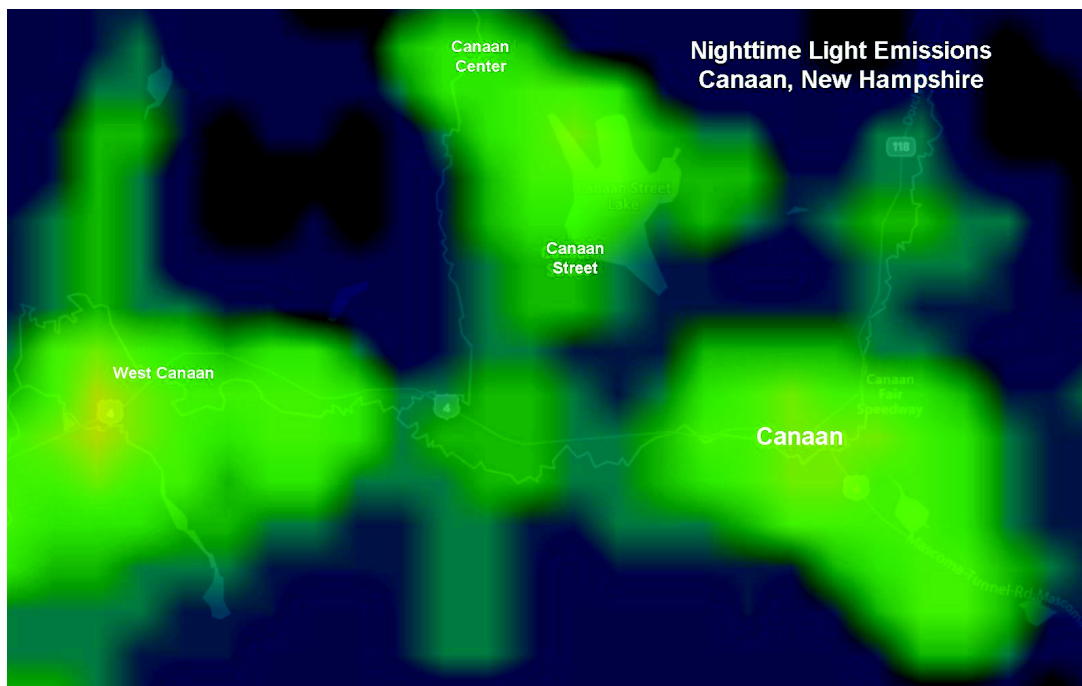
C. Economy Land Uses

1. Encourage small service oriented businesses and other low impact businesses throughout town. Low impact businesses don't create problems such as noise, odor, bright lighting, or traffic. Encourage retail, hospitality, and professional businesses within and near Canaan Village.
2. Discourage the intrusion of commercial and industrial uses in residential neighborhoods. Develop land areas along routes 4 & 118 for retail, commercial, and light industrial uses set back from the highway.
3. Adopt and enforce Site Plan and zoning regulations dealing with water protection, septic systems, and signage. Site Plan review doesn't regulate single family or two family residences, but it does apply to commercial properties, apartments, and other multi-family lots.
4. Review, restrict or prohibit commercial activities that adversely affect schools, public facilities, and public gathering places, including personnel therein.
5. Work to create an attractive village center that will result in the amicable coexistence of residential and nonresidential development.

D. Town Building and Service Land Uses

1. Identify ordinances and regulations that contribute to the health, safety, and well-being of Canaan residents
2. Encourage contiguous and compact patterns of growth around existing village settlements and provide economic and timely provision and extension of public facilities and services.

3. Limit building height to 3 stories to avoid need for expensive fire department aerial ladder truck.
4. Consider regulations for cell tower placement, so that service is provided, but visual impact to the community is minimized.
5. Consider regulations for solar and wind power generation systems, to minimize degradation of views, minimize noise, minimize environmental impact, and maximize safety.
6. Explore ways to implement the Town's current impact fee ordinance for new construction to reduce the impact on town budget as additional municipal services are provided.
7. Implement a dark skies ordinance to avoid street lighting that projects upwards.
8. Enforce junkyard regulations. Adopt and enforce additional regulation of junk in Canaan.
9. Manage development in the underdeveloped portions of the community until road accesses and other town services are upgraded to accommodate a higher density without placing an increased tax burden on our current residents.



<https://lighttrends.lightpollutionmap.info/>

The map shows where night skies are still relatively dark and where there are hot spots — areas where the blues and black indicating darkness are replaced by greens and yellows indicating the glow of artificial light at night. The brightest source of light pollution in Canaan appears to be the Mascoma High School and Indian River School complex in West Canaan. Canaan Village and Cardigan Mountain School at the north end of Canaan Street Lake also show up as a bright areas.

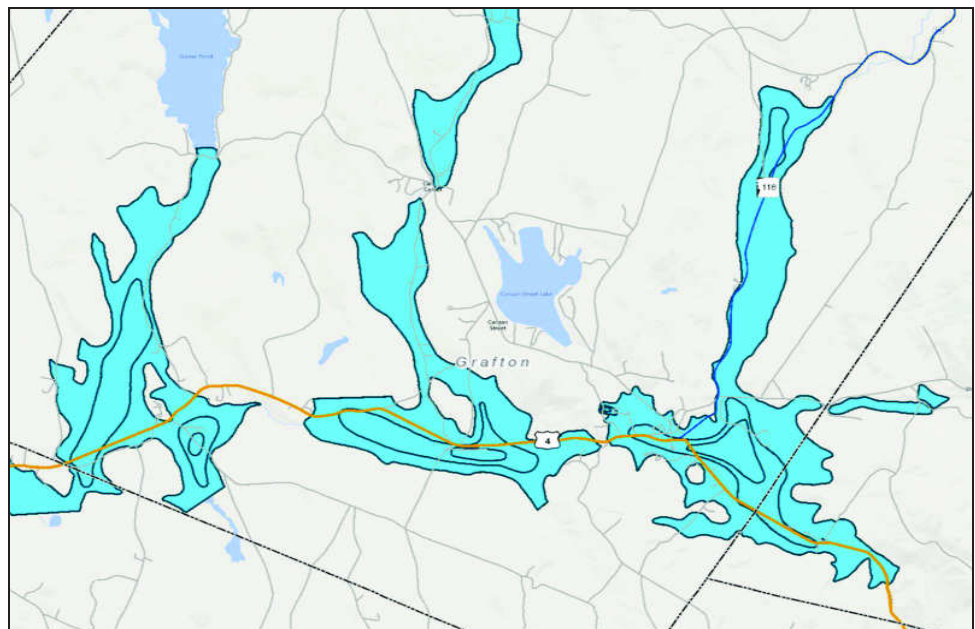
Canaan has relatively dark skies compared to many areas in New England. Where there is light in the sky it disrupts the behavior of plants and animals, which evolved in a world without light from buildings, streetlights and other sources. In addition, light pollution has been linked to health problems in humans, including sleep disorders and obesity.

E. Road and Transportation Land Uses

1. Study the options for eventual town acceptance of private roads. Road maintenance and road quality would be improved, thereby increasing desirability of Canaan's residential real estate and assessed values. This is a long term goal.
2. On major roads such as Route 4 & 118, require screening from road if there are unsightly cars, tires, appliances, building materials, and etc. Consider revising existing ordinance if necessary.
3. Consider sign restrictions so as to avoid excessive signage, traffic visibility or traffic distraction problems.
4. Comply with RSA 674:41 which limits building permits, unless there is road frontage
5. Increase sidewalks in Canaan village for safe passage of school children throughout the village. Sidewalks should extend to the post office, bank, restaurants and retail establishments in the village.
6. Plan roads to fit the contour of the land, avoiding stretches of steep land and wet areas.
7. Maintain and improve the accessibility to and the economic viability of the existing village center.
8. Support continuation and expansion of public transportation between Canaan Village, shopping and medical facilities in Lebanon and West Lebanon.

F. Natural Resources and Recreation Land Uses

1. Identify, and protect critical natural resources.
2. Base future land-use decision-making upon the natural capability of the land and other resources to sustain varying types and intensities of development.
3. Preserve Canaan's rural character which features forest, agriculture, scenic views, quiet, privacy, and wildlife. Adopt regulations that support these ideals. Preserve rural atmosphere by requiring some sections of town to be large lots, generally away from the densely developed areas.
4. Preserve some large lots for agriculture, but also allow agriculture on some smaller lots if noise and odors are limited. Avoid placing agriculture near sensitive water resources, like lakes, ponds, aquifers, & rivers.
5. Encourage cluster development which provides common open space for aesthetics, wildlife, and storm water control.
6. Conserve and protect selected undeveloped land for wildlife corridors, open space and recreation purposes. Protect lake, pond and river shore frontage for public access.
7. Limit development density so as to protect below ground drinking water aquifers from septic and other discharges. These aquifers are generally near route 118, route 4, Switch Rd, Roberts Rd, and a few others.



Aquifers in Canaan are generally below the valleys where the roads and villages have been built.

8. Adopt subdivision regulations that limit creation of lots with a large perimeter to area ratio.
9. Restrict subdivision in rural areas so that adjacent narrow-frontage lots are not created. Enact a minimum lot size for new narrow-frontage lots, to maintain low density development.
10. Encourage a low density of development in areas of town where slope, soils, or other natural features make the land less suitable for development.
11. Ensure that the topography of land chosen for any proposed development has natural drainage and suitable soils and slope for the intended development use.
12. Protect the character and enjoyment potential of rural areas through continued wise use of natural resources, and by avoiding scattered development and incompatible land uses.

G. History Land Uses

1. Promote, protect and enhance Canaan's visual/cultural/historic resources at both the community-wide scale as well as on a site-by-site basis.
2. Promote the Canaan Village area in order to reinforce this area as the social, cultural, economic, and governmental center of the community.
3. Continue to encourage rehabilitation of Canaan's older housing stock and underutilized historic structures using tools such as Rehabilitation Tax Credits, Industrial Development Tax Credits, and Community Development Block Grant Funds.
4. Promote, protect and enhance Canaan's Historic District, which is home to the meetinghouse, museum, and old North Church.

IV. CANAAN'S PEOPLE

A. Population

1. Canaan had 504 residents in 1790, the first year in which a census was taken. It grew rapidly until after the Civil War, followed by slow growth through most of the 20th century. Its most rapid recent population growth was in the period between 1960 and 1970, and again between 1970 and 1980. During each of these decades the Town experienced a 28% increase. Decennial censuses showed Canaan's population was 3,319 in 2000 and 3,909 in 2010, an 18% growth. The population has been level since then, estimated at 3,920 in 2016 by New Hampshire's Office of Strategic Initiatives. The Town's recent growth is higher than other area towns, and especially higher than Enfield.

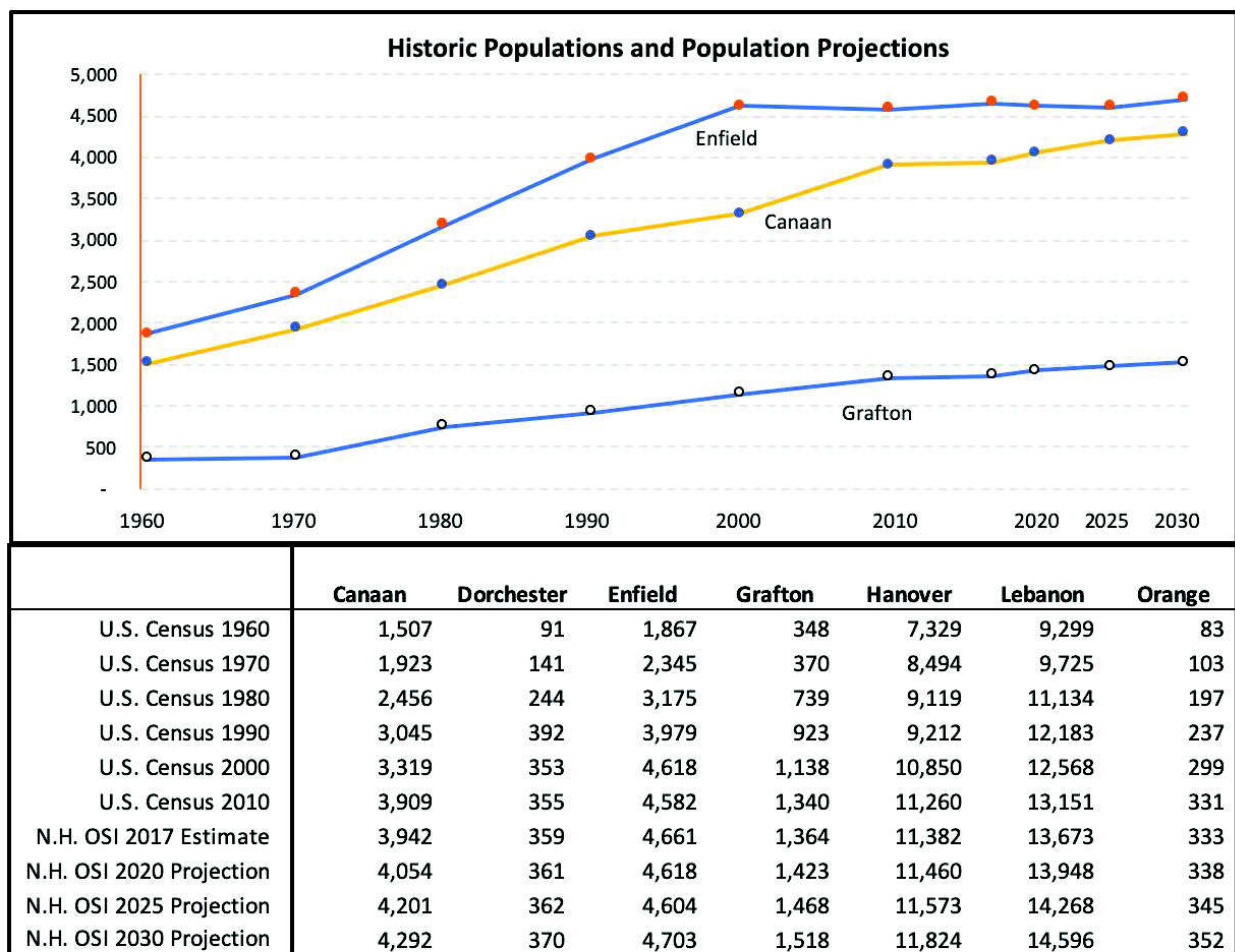
	US Census 2000	US Census 2010	OSI Estimate 2016	Percentage Change 2000 to 2016	Persons per Sq Mile
Canaan	3,319	3,909	3,920	18%	74
Dorchester	353	355	359	2%	8
Enfield	4,618	4,582	4,629	0%	115
Grafton	1,138	1,340	1,363	20%	33
Hanover	10,850	11,260	11,467	6%	234
Lebanon	12,568	13,151	13,599	8%	337
Orange	299	331	331	11%	14
Grafton County	81,740	89,118	89,891	10%	55
New Hampshire	1,235,550	1,316,256	1,334,591	8%	160

Population of Canaan and Surrounding Towns

B. Recommendations

1. Determine the causes in the differences between Canaan's population growth and Enfield's.
2. Follow the trends to determine if the Town's population will again increase.

3. Consider the impact of the Town's growth on the future need for town services, including police and fire services, water and sewerage.
4. Explore ways to direct population growth away from valuable resource areas such as floodplains, steep slopes and ridgelines.
5. Manage population and business growth so that it will occur at a moderate rate, and not outpace the Town's ability to provide community facilities and services.
6. Work toward meeting the needs of its older residents by including assistance with "aging in place" programs.



NH Office of Strategic Planning; Population Projections by Municipality; September 2016

<https://www.nh.gov/osi/data-center/documents/2016-subcounty-projections-final-report.pdf>

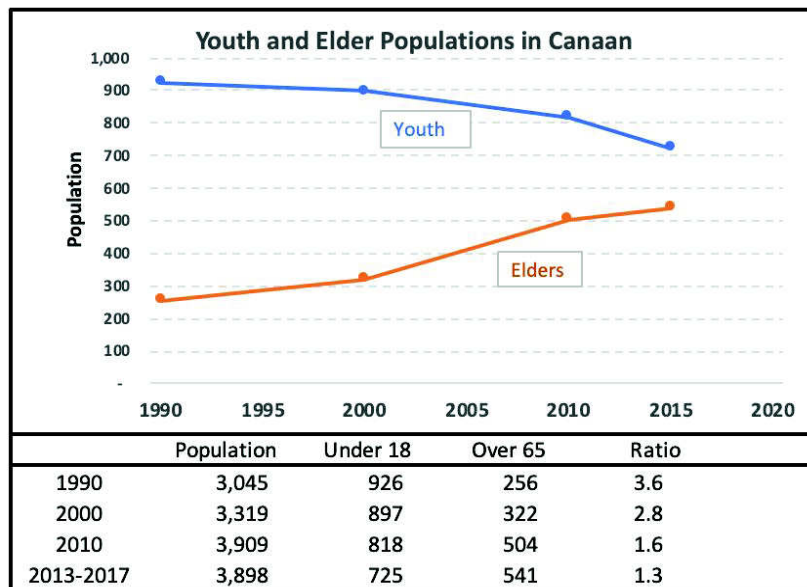
Canaan's population is projected to grow more slowly over the next ten years than during the rapid growth period of 1960 through 2010.

C. Percentage Distribution of Population by Age

1) Canaan's population is concentrated in the elderly age group.

	Ages 0 - 19	Ages 20 - 34	Ages 35 - 54	Ages 55 - 64	Ages 65 + above
Canaan	21%	15%	30%	18%	16%
Dorchester	14%	15%	31%	16%	24%
Enfield	18%	16%	33%	15%	18%
Grafton	21%	13%	27%	21%	19%
Hanover	29%	34%	18%	8%	12%
Lebanon	20%	22%	26%	16%	16%
Orange	19%	12%	21%	21%	27%

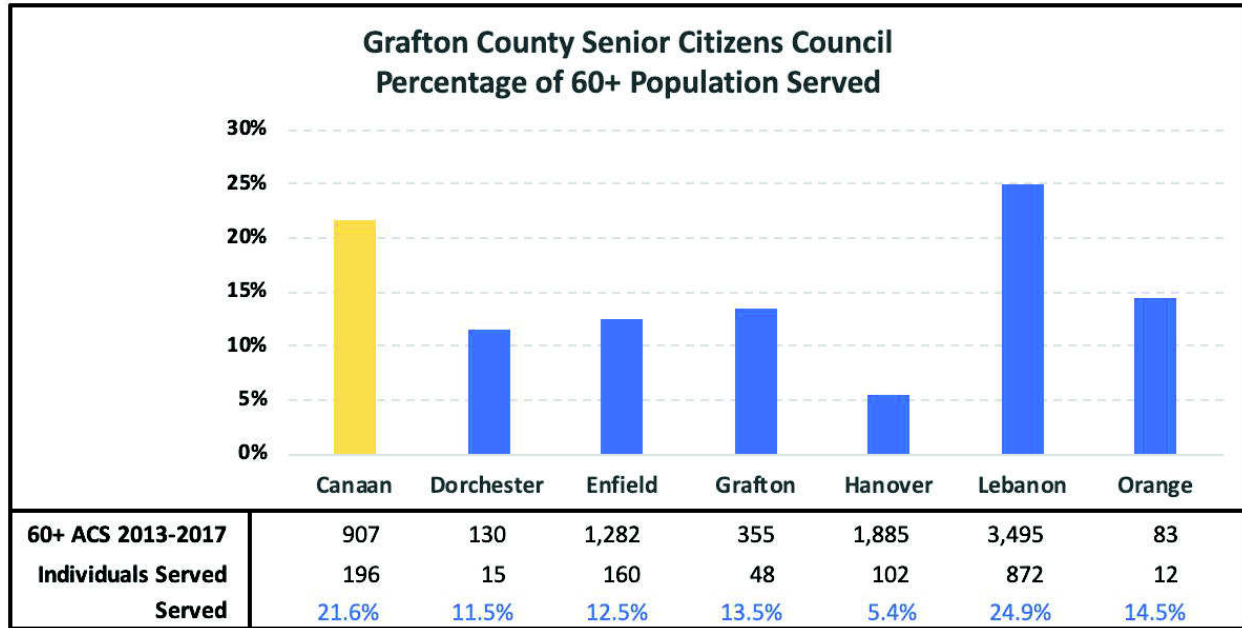
American Community Survey data, 2011-2015



1990, 2000, 2010 data from Decennial Census

2013-2017 5-year data average from American Community Survey

Since 1990 the number of young people under 18 in Canaan has decreased by 200, while the number of elders over 65 has increased by 285. The school population has decreased while the elder population more than doubled. The town is approaching having as many elderly residents as young people. It will be important for the town to expand elder services, including senior center services, transportation, and access to emergency services as the population shift continues.



American Community Survey (2013-2017) and Grafton County Senior Citizens Center data

The Mascoma Area Senior Center is an important resource for elderly people in Canaan. The congregate meals and home-delivered meals it provides are essential for the health and social connections of this part of our population. The Senior Center provides transportation for medical appointments and shopping, recreational activities, and social services coordination. In addition, it offers a food pantry available to all residents. Canaan is fortunate to have this facility in Canaan, and the town needs to continue supporting its valuable programs and its use of Canaan's Indian River Grange Hall.



Old Home Day Parade



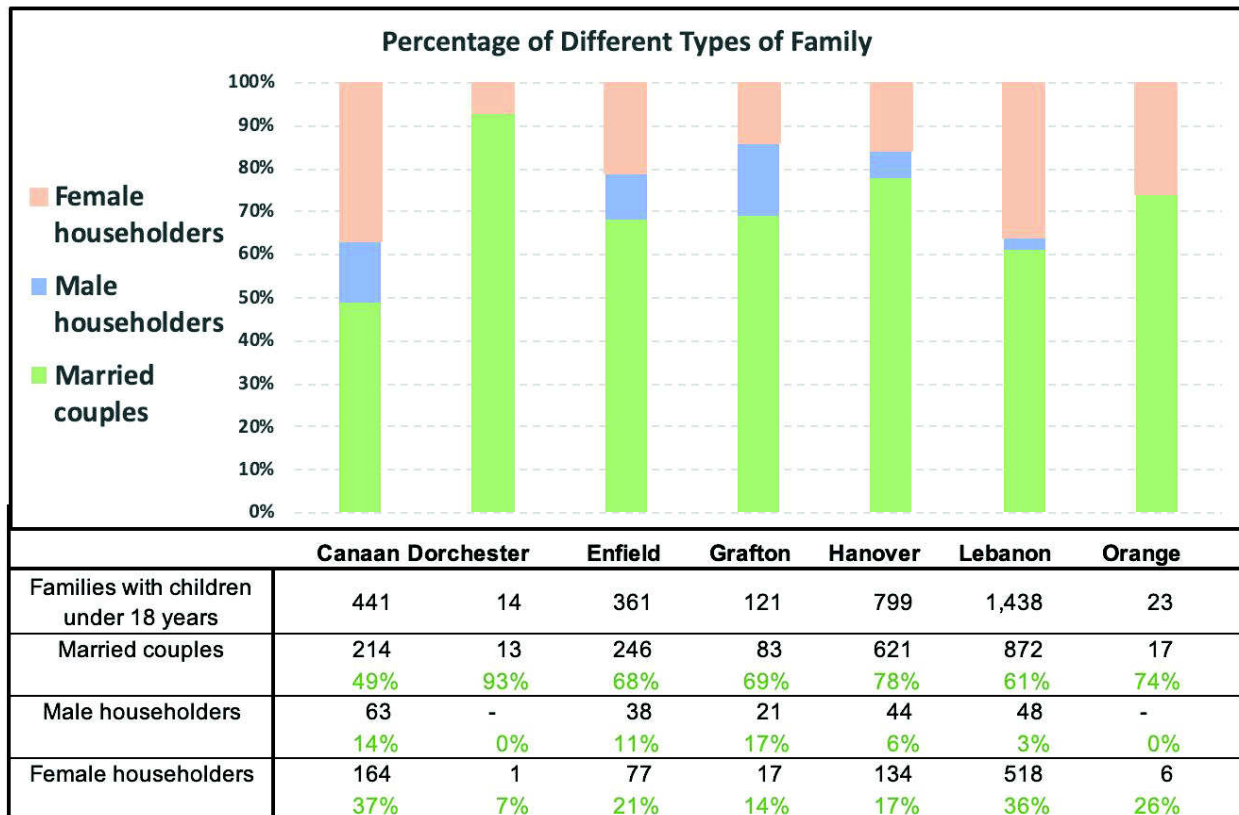
With Music



With Competitions



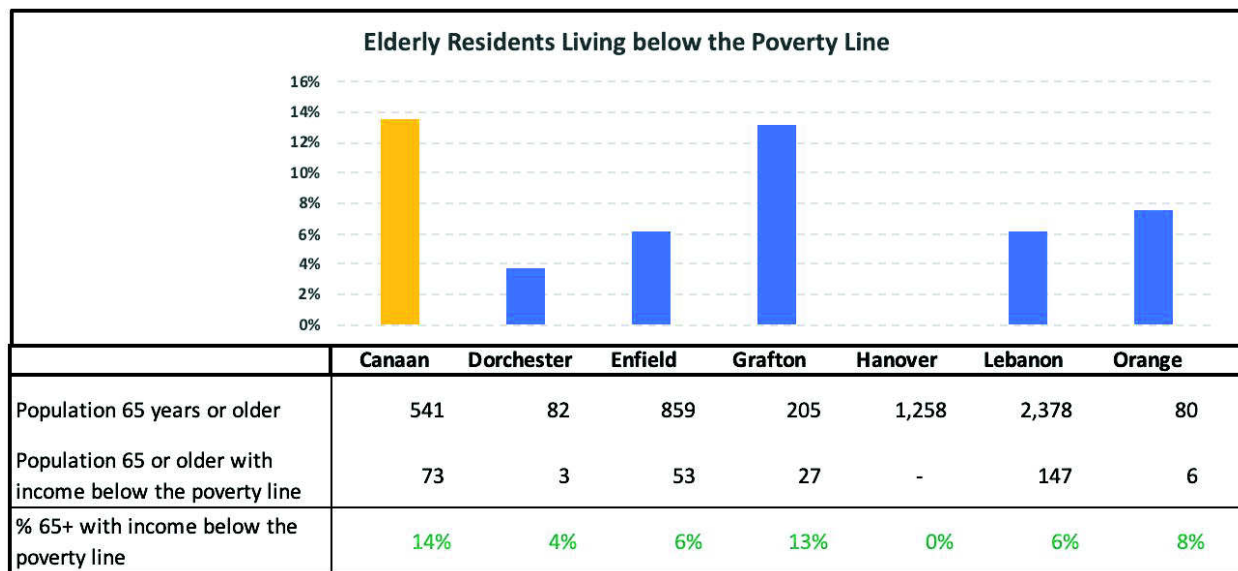
With Awards



2010-2014 American Community Survey 5-Year Estimates

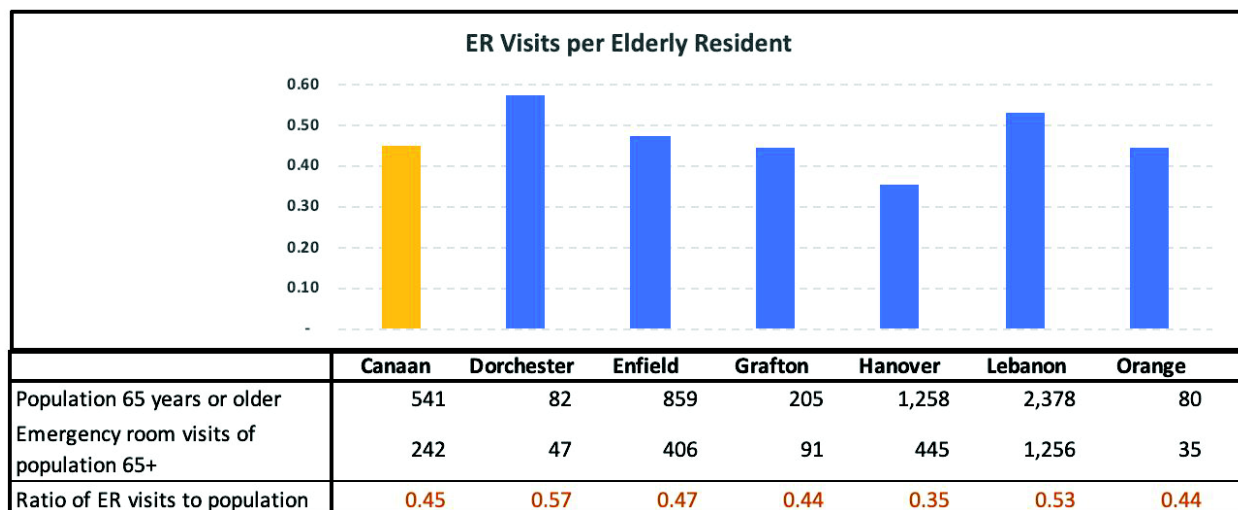
American Community Survey (2013-2017) and Grafton County Senior Citizens Center data

About 50% of families in Canaan include a married couple. This is a smaller percentage than any of our nearby towns. The difference may reflect the availability of low cost housing. Many families with a single adult have special needs in preparation of good meals and provision for child-care, and the town should work to accommodate those needs.



American Community Survey data (2011-2016); margin of error is large for small towns

The American Community Survey data indicates that one in seven of Canaan's older residents is living in poverty.



Medicare Master Beneficiary Summary File data

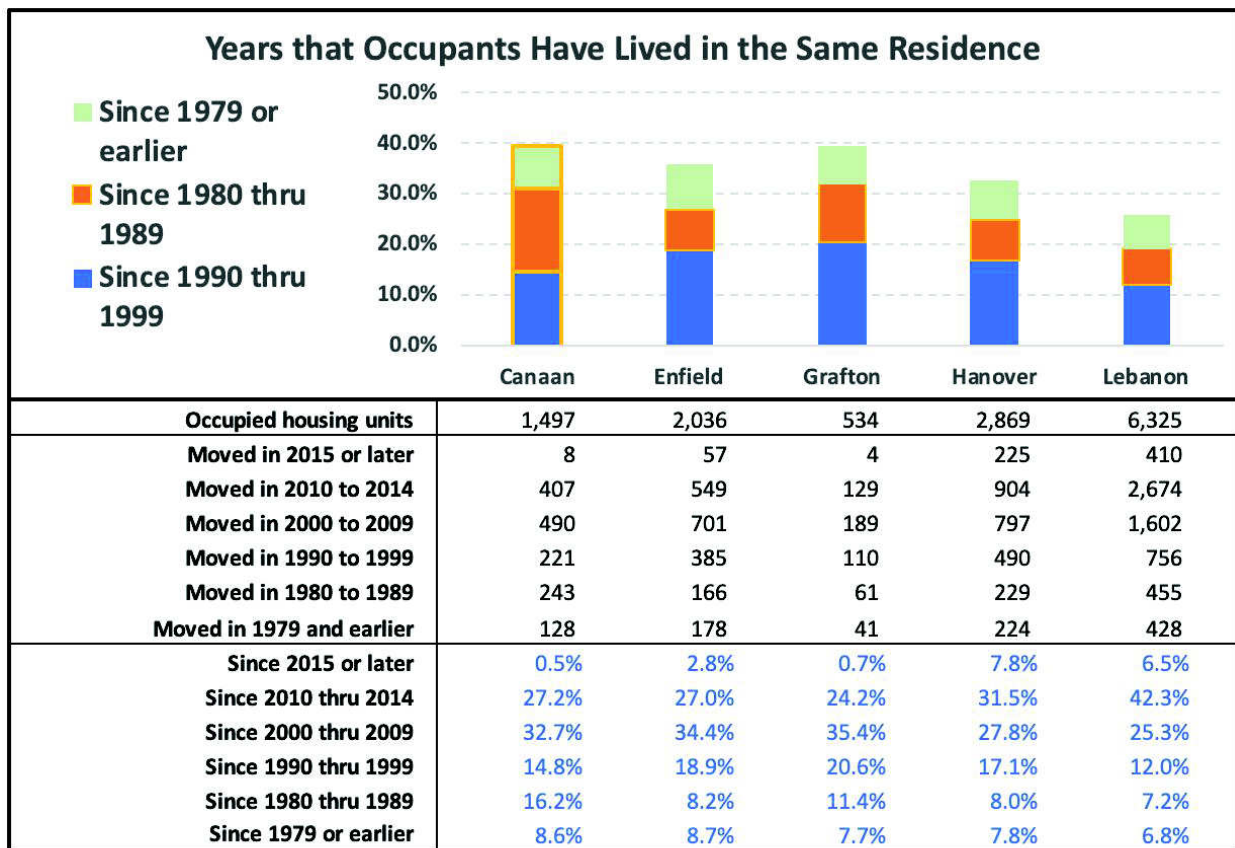
Emergency room visits are an expensive and often avoidable use of medical services. A higher ratio of visits to population indicates that the population is receiving less adequate care. Canaan's visit ratio is well below the state average, 0.57 visits per person. Utilization of the Mascoma Community Health Center may help to further reduce the need for ER visits. We need to celebrate and maintain the medical care provided to our elderly residents.



Students providing community service

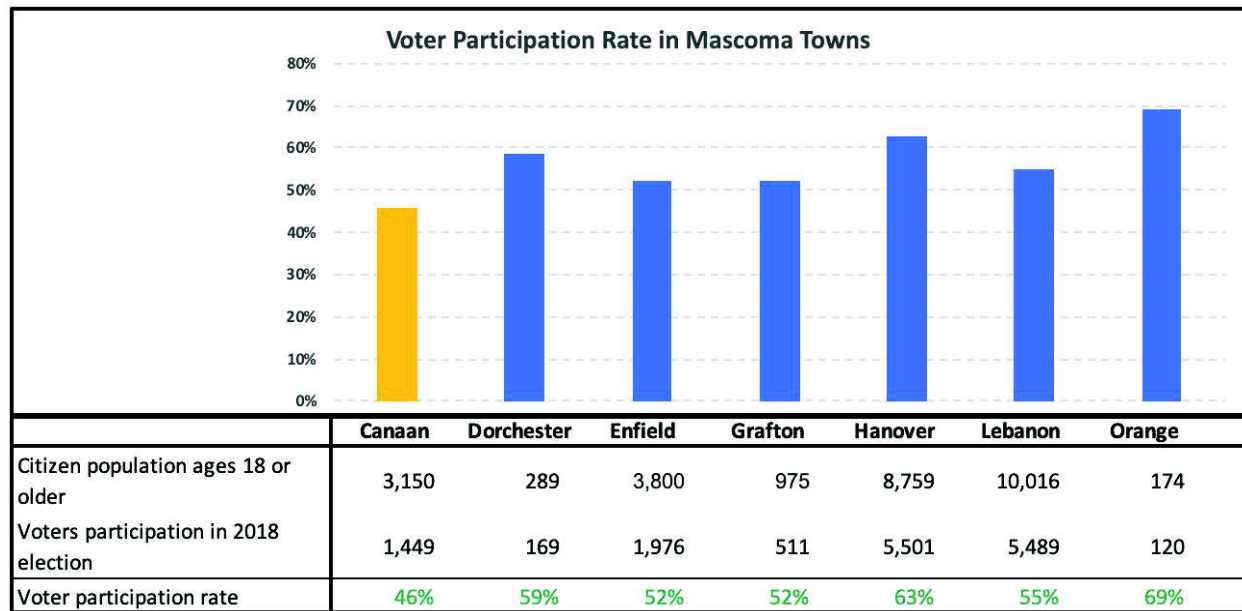


Canaan has several active athletic groups



American Community Survey data (2012-2017)

Almost 40% of adult Canaan residents live in the same residence in Canaan that they occupied in 1999. That stability of residence increases the sense of community in our town, but as Canaan moves more toward acting as a bedroom community for the Lebanon/Hanover/White River economic area the number of long-term residencies is likely to decline.



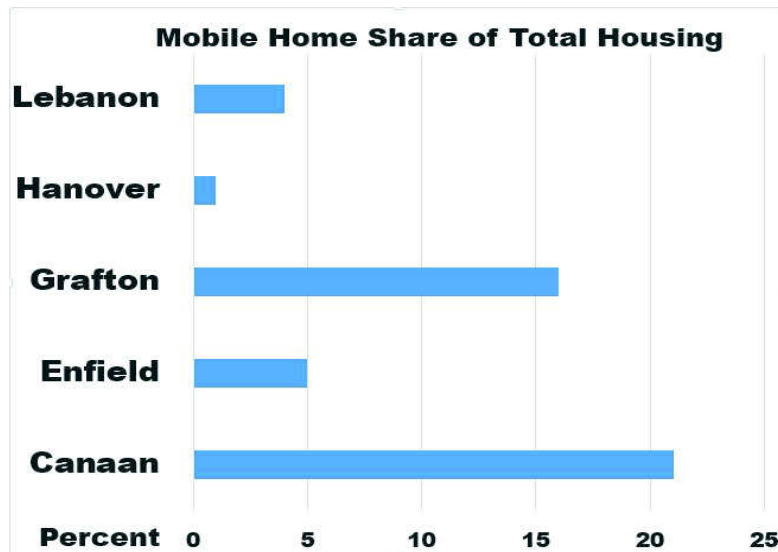
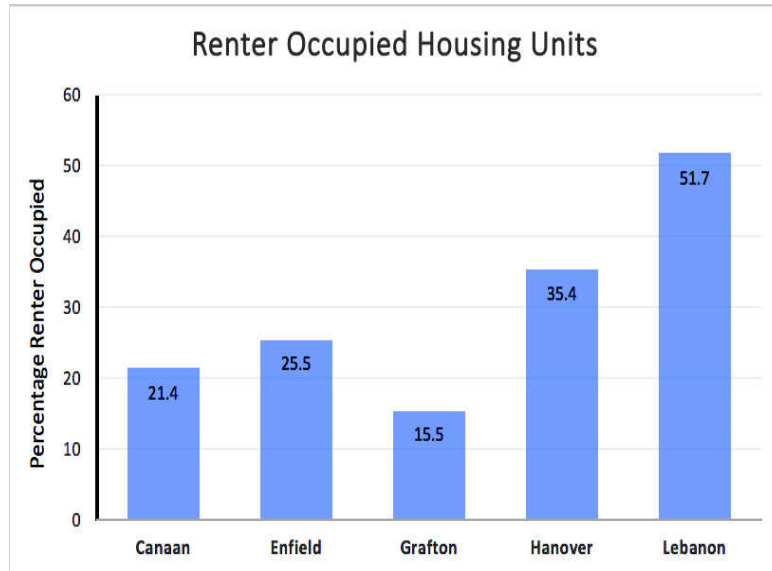
Data from New Hampshire Secretary of State records

The New Hampshire voter participation rate in 2018 was 55%. A higher participation rate indicates greater resident involvement in their community. The town should track the participation rate and work to increase residents' participation in voting.

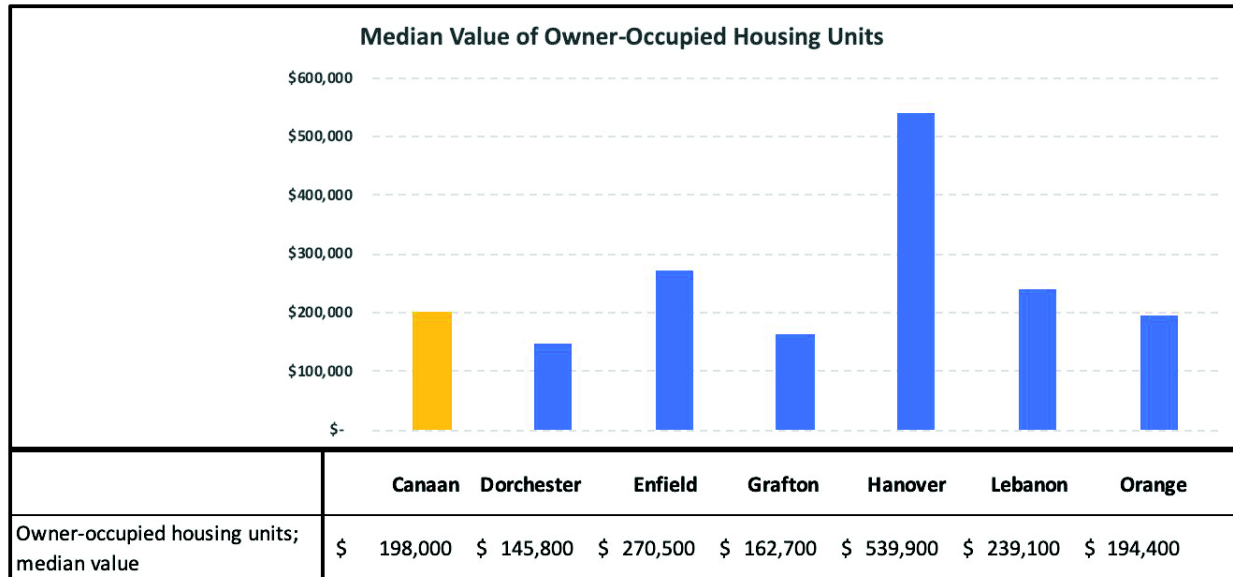
V. HOUSING

A. Introduction

Housing is a primary component of a community's development. It represents patterns of energy, transportation, services, economy and social fabric. It also reflects the constraints of social and historical development. In many ways housing in Canaan is similar to that in our neighboring towns. It has about the same amount of rental housing, but has a larger percentage of mobile homes.



Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates



The lower value given to housing in Canaan compared to similar housing in Enfield and Lebanon leads to Canaan's increased tax rate. While the lower purchase prices may be attractive to some homebuyers, they can also cause reduced town revenue.

B. Recommendations

1. Encourage a diversity of safe and affordable housing consistent with the character and scale of a rural New England community.
2. Reinforce small-town settlement patterns through local land use regulations.
3. Encourage a land use pattern that provides higher density housing in close proximity of the village center with water service and lower-density housing in the more remote areas of town. By allowing higher-density new housing in these areas, the town can offer housing alternatives to meet the future needs of its residents, and help preserve open space elsewhere in town. New housing in these areas can also help local commercial activity, minimize cost for municipal services and conserve energy. For many areas not served by the town's water system, it is crucial that any land being developed should be able to support the water needs of the land use being proposed. The historic character of these areas is another important consideration. However, if good siting and design principles are followed, the new developments will be harmonious with the traditional small-town qualities of Canaan. Housing development in remote areas results in higher municipal service costs, larger response

times for emergency services and higher transportation costs. Large lot size is essential to ensure lower densities in outlying areas.

4. Require environmental and fiscal impact studies for all large-scale residential development proposals.
5. Employ land use regulations to discourage development in critical resource areas such as wetlands, steep slopes, prominent hills and floodplains. In those areas with steep slopes, town services are more expensive, erosion damage is more severe, and visual impacts may detract from the character of the town.
6. Encourage rehabilitation of the Town's older housing stock.
7. Carefully control the conversion of existing buildings into apartments and condominiums. While in many cases it is both practical and desirable to convert single-family homes and other buildings into multi-family dwellings, the issues of sewage disposal, water supply, parking, landscaping, and compatibility with adjacent land uses should be reviewed by the appropriate municipal authorities. With proper guidance, this form of housing growth can greatly help Canaan accomplish its goal of providing affordable housing in a desirable manner.
8. Encourage the Town to adopt State Building Code enforcement to promote safe, well-constructed and energy-efficient housing.
9. Encourage the provision of adequate housing to meet the needs of Canaan's elderly and handicapped population in appropriate areas.
10. Identify and preserve architecturally and historically significant houses and buildings.



The Rand House at the corner of Parker Street and the Town Commons is a great example of a historic building that is being well preserved.

11. Discourage large commercial and industrial intrusion in residential neighborhoods. Such intrusion can lead to problems such as noise, the safety of children and adults, and a decline in both residential property values and the quality of life for residents of the neighborhood.
12. Require the owner of any structure that is a safety hazard to members of the public to correct the hazardous conditions or to raze and remove the structure, in accordance with RSA 155-B.
13. Adopt local land use controls that will allow manufactured homes and pre-site-built housing. Regulate manufactured home parks, especially in terms of water, sewage disposal, landscape buffering, access and density.



When properly installed and neatly maintained, pre-site-built housing can be an attractive part of the community.

14. Condominiums began appearing in New Hampshire in the 1970's. Although often thought of as a type of structure, the term actually refers only to ownership. Condominiums are usually attached housing units (although they can be detached individual units) located in a development that has commonly-owned and maintained land, facilities and services. Condominiums can be beneficial to a community because they offer high property values with fewer needed services and fewer school children. Consider appropriate land use regulations to promote beneficial condominium developments.
15. Cluster Housing, also known as conservation development, is a site planning approach that is an alternative to conventional subdivision development. It is a practice of development that groups residential properties in a proposed subdivision closer together in order to utilize the rest of the land for open space, recreation or agriculture. Canaan should encourage cluster housing development in appropriate areas to preserve open space and maintain the rural character of the town.



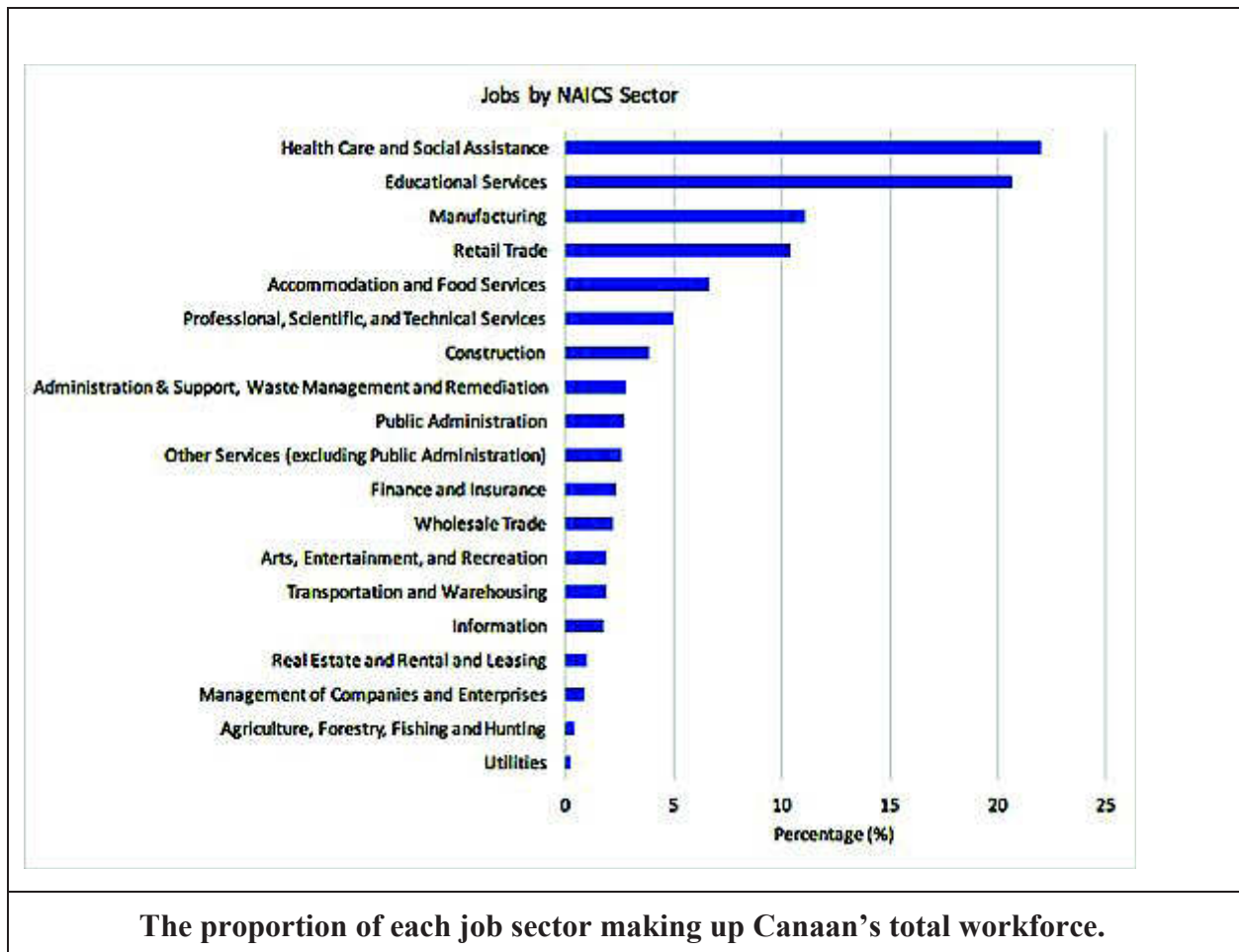
Cluster housing allows developments to maintain open and natural land.

VI. ECONOMY

A. Employed Population

1. As of 2015, Canaan's population was estimated to be 3,912 of which 1,937 are working (nearly 50%). As shown in the figure below, more than 40% of Canaan's workforce is employed by the health care and education sectors. Manufacturing, retail, hospitality and food services, and professional, scientific, and technical services sectors make another 35%. (US Census Bureau 2015).

Jobs by North American Industry Classification System

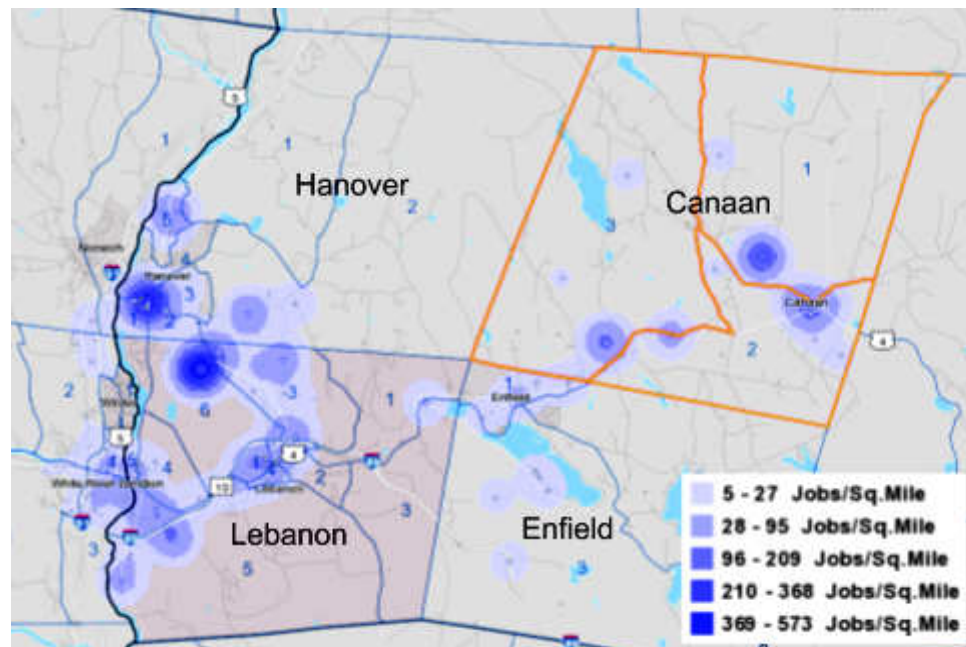


2. The table and map on the following page show that nearly two-thirds of Canaan's workers travel out of town for work with commute times of 10

minutes or more. This large net outflow of workers indicates that Canaan is primarily a residential community for the economic centers of Lebanon, Hanover, and White River Junction, with the primary employers being Dartmouth-Hitchcock Medical Center, Dartmouth College, and the VA Medical Center, respectively. (US Census Bureau 2015)

Canaan Workers and Residence

	Count
Workers Living in Canaan	1,937
Jobs in Canaan	668
Outflow of Workers from Canaan	-1,269



Employment locations for Canaan workers.

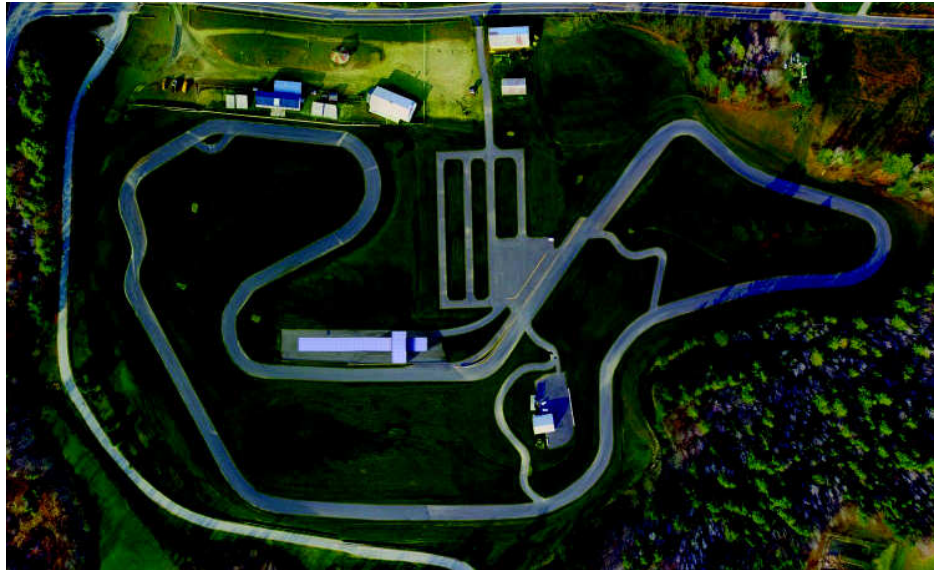
3. Canaan workers with local jobs have employment clustered in the village and high school areas. Relatively few Canaan people are employed in Enfield, but Lebanon and Hanover are major job locations.



Cardigan Mountain School, one of Canaan's largest employers

B. Recommendations for Canaan's Economic Future

1. Protect and improve the appearance of the highly traveled corridors along Routes 4 and 118. These corridors and the village are the most visible part of Canaan's public face and may influence the decision by prospective businesses and residents to locate in town.
2. Encourage local businesses to apply to and participate in the NH Adopt A Highway program to keep our highways litter free.
3. Inventory available industrial sites and designate suitable areas for future industrial development.



Canaan Motor Club is a 1.3-mile technically challenging road course that attracts racing enthusiasts across the Northeast.

4. Suggest reasonable land use regulations to encourage planned industrial development that does not adversely impact the town's economy.



Open lands along Routes 4 and 118 add to the scenic and business appeal of the town.

5. Actively promote Canaan's local businesses.



Businesses such as Canaan Hardware fronting on Canaan's green promote Canaan as an economic center.

6. Continue to utilize Town publications such as the broadcast emails, website, event notices, and the business directory to promote local businesses.
7. Continue to encourage and support town-wide activities, such as the Memorial Day parade, Old Home Days, and Christmas in Canaan, to promote local business and improve town visibility.
8. Collaborate with regional planning commission to update the ten year NH DOT transportation plan to include corridor improvements.
9. Explore external sources of resources (state, federal and private foundations) to establish a link to existing fiber optic networks, such as the New Hampshire Fast Roads network that runs through Enfield along NH Route 4A and the fiber optic line along Route 4.
 - a) Explore opportunities to expand broadband provider choice. Access to broadband internet and cellular phone services will be of increasing importance for economic development. Canaan is currently and will be for the foreseeable future a residential community for Upper Valley businesses and institutions located along the I-89 and I-91 corridors. As the Upper Valley continues to grow, access to a fast and dependable internet connection will likely be a significant driving factor in how the population distribution evolves.

- b) Encourage communication companies to expand their broadband and wireless networks within Canaan.



2013-2017 American Community Survey 5-Year Estimates; numbers from small towns have wide margins of error

The chart is of residences which have neither land line nor cell phone service. Canaan still has large areas with no cell phone coverage, but there are also residences which, for financial or other reasons, live without phone service despite the availability of landline service to all residences.

10. Encourage commercial and industrial businesses to locate to Canaan. Industrial sites should have suitable development potential and good transportation access. Commercial and industrial uses should be confined to those which will not adversely affect the environmental or historic character of the town, create excessive noise, odor, traffic or light pollution, and which are appropriate in terms of scenic values.
11. Reach out to civic-minded commercial developers about redevelopment or rehabilitation of commercial properties in town.

- a) Coordinate with local business owners and developers with intentions for future development and how they might impact the local economy.
- b) Encourage new construction in the village to be aesthetically pleasing.
- c) Promote small retail, professional services, and restaurants to be located in the village.



The Dollar General outlet that opened on Route 4 in 2018 is a valuable addition to Canaan's business base.

- d) Enhance the workforce needed for local businesses.
- e) Inventory skill set needs of local businesses.
- f) Support adult education and job-training programs focused on areas of need.

12. Plan carefully to prevent unexpected increases in tax burden.

- a) Analyze real estate sales prices and assessed values to determine how tax revenue are affected by different growth scenarios.
- b) Consult with local real estate professionals to determine the predominant factors in Canaan real estate valuations.
- c) Develop a growth plan that promotes property appreciation and reduction in individual tax burden.

13. Attract tourism by leveraging Canaan's natural resources to promote low-impact and low-nuisance activities, such as hiking; mountain biking; ski touring; flatwater and whitewater kayaking, etc.
- a) Catalog and map Canaan's natural resources and open areas to uncover additional opportunities.
 - b) Coordinate with landowners and adjacent towns to establish a trail networks and parking areas.
 - c) Encourage peripheral business development and marketing, e.g., bike sales and service shops, cafes, and lodging.
 - d) Maintain and update activities directory.



Mascoma Community Health Care has full primary care and dental services

14. Support the Mascoma Community Health Center which provides major benefits to the Town and surrounding communities as it flourishes. Its social and human benefits are considerable.

- a) Monitor use and need of bus and van services to assure convenient and inexpensive patient access.
 - b) Consider the need for traffic controls at the corner of Roberts Road and Route 4 in response to the increase in vehicular traffic at this intersection.
 - c) Utilize the town web page and to actively advertise this facility as a definite draw to attract new residents.
- 15.** Canaan should take a strong role in stabilizing and fostering active, productive locally owned farm and forest enterprises.
- 16.** Consult resident farmers to determine how the community can enhance the viability of agriculture in Town, and make recommendations accordingly.

VII. TOWN BUILDINGS and SERVICES

A. Overview

The Town owns and maintains numerous buildings and facilities. The Meetinghouse and Museum are significant historical landmarks, and the other facilities are required to support the delivery of critical municipal services, such as police, fire, ambulance, highway maintenance, library, senior center, trash and recycling transfer, and so on. The goal is to provide high-quality community facilities and services in the most efficient manner to meet the existing and future needs of Canaan's residents and businesses.

B. Recommendations

1. Provide high-quality community facilities and services in the most efficient manner to meet the existing and future needs of Canaan's residents and businesses.
2. Consider access for fire engines and emergency vehicles as a major element in evaluating the location and design of proposed subdivisions and developments. Avoid development creating long, streets, driveways, or rights of ways to remote sites. Consider additional guidelines regarding building permits on non-maintained town roads. Provide two potential means of access for fire trucks and other emergency vehicles whenever possible.
3. Minimize the density of development in outlying areas to minimize municipal service costs, minimize the response time for emergency vehicles, and result in a more desirable land use pattern.
4. Study whether the Town needs a building height limit.
5. Where cost effective, consider upgrading existing facilities and utilities, rather than erecting new structures.
6. Locate community facilities in central, convenient locations on walkable and side-walked roads with good access, and adequate parking.
7. Plan for and encourage multi-purpose use of community facilities to maximize public use and benefit, while being cost effective.
8. Create a plan for upgrading energy efficiency for all community facilities.
9. Continue incentives to increase recycling and reduce the portion of solid wastes that require landfill disposal.

10. Investigate methods to accept additional residential waste at the transfer station, such as painted wood, furniture, and mattresses. The goal is to accept all waste from residences or seasonal dwellings. Expanding this to include commercial waste materials could be considered if it is cost effective.
11. Avoid overlap of municipal services and responsibilities.
12. Explore opportunities to provide community services on a regional basis to minimize cost and/or ensure a higher level of services.
13. Participate in regional planning where it provides better services at reasonable cost.
14. Plan water and sewer system expansion for village areas and other high-density areas.
15. Investigate options for a youth/community center.
16. Assure adequate planning for the replacement of police, fire, and highway vehicles using a robust Capital Improvement Plan integrated with the annual town budget.
17. Continue to implement the maintenance and improvement program for municipal buildings.
18. Continue and approve the work safety policy for Town personnel in each department.
19. Improve areas within buildings that do not meet current safety, personnel security, or Americans with Disability Act (ADA) access code requirements.
20. Improve public records storage by adding secure climate controlled storage areas, with protection from mold, fire and other hazards.
21. Buildings, policies, and plans should be modified to address rising threats from terrorism and active shooter situations. Attention should be given to communication, training, and exercises.
22. Ensure proper street lighting for selected higher traffic streets, intersections, crossings, and walkways.
23. Complete mapping of all cemetery lots, especially in areas where new interments are more likely.

24. Plan for new or expanded town office space to meet the needs of increasing population, employees, records, and regulations.
25. Plan for new or expanded highway garage to accommodate increasing vehicle fleet and related maintenance.
26. Continue the planned maintenance and upgrade of all town roads, both paved and unpaved.
27. Repair or replace deteriorating bridges which have been included in the state's red list.
28. Increase protection from hacking and ransomware, by enhancing policies, training, and software.
29. Review and implement best practices for the application of deicing and dust control chemicals on roadways, sidewalks, and parking areas, especially those near waterbodies.



Mascoma Valley Regional High School is an important resource to the town. Its Mascoma Performing Arts Center is used by a variety of town groups

VIII. ROADS and TRANSPORTATION SYSTEMS

A. Overview

Ensure a cost-effective transportation system that will meet, to the maximum extent possible, the mobility needs of local residents and will provide for the safe, efficient movement of goods and people within and through Canaan.

B. Recommendations

1. Submit a project request to NH DOT for an improvement project at the corner of Roberts Road and Rte. 4, the site of the Health Center, to widen the road, improve visibility around the curve, and provide a turn lane on the Eastbound side of Rte. 4.
2. For larger developments that increase traffic on surrounding roads, require the developer/subdivider to improve off-site roads as a condition for subdivision approval. Even if the new road in a subdivision meets the town's specifications, the other roads in the area may not be adequate to accommodate the increased traffic resulting from the development. In this case the developer/subdivider should pay his proportion of the cost to upgrade these off-site roads.
3. Continue to maintain an inventory of Town roads, bridges and culverts and develop a road maintenance plan. Indicate in the inventory the ability of culverts to handle future large stormwater events. Continue to include road maintenance and improvement in the CIP process.
4. Investigate the feasibility of establishing and maintaining sediment basins along Town roads to reduce sediment runoff into the Mascoma River.
5. Ensure that an adequate setback is required for buildings, fences, etc. which would obstruct the vision of motorists and bicyclists.
6. Encourage and support regional bus service. The implementation of public bus service has had a very positive impact upon the town, improving the mobility of commuters to employment centers and providing the only mode of transportation for many elderly persons. Free fare public transportation is valuable to retired persons and to students going into Lebanon, handicapped persons, as well as to commuters.

7. A walkable Canaan will have attractive, safe and convenient walking routes. Improve pedestrian travel through the construction or widening of sidewalks, planting trees and other plantings, installing benches, curb ramps, crosswalks, signals and signs.
8. Encourage the maintenance, construction, and repair of town roads in a manner consistent with the character of the town and reflective of the historical pattern of tree-lined and scenic highways, including but not limited to, the preservation of stone walls.
9. The Planning Board should periodically review its land use regulations to ensure all roadway and driveway requirements are consistent with best management practices.
10. Consider improvements to road shoulders when roads are reconstructed or resurfaced to provide appropriate and safe pedestrian and bicycling surfaces.
11. Periodically review the town policy concerning private roads.
12. Continue to enforce construction standards for private roads.
13. Continue to promote subdivision plans that minimize the number of lot access points to existing collector or arterial roads. Such plans would reduce the number of intersection conflicts on the more heavily traveled roads. A similar approach should be used for commercial developments.
14. The Town should take into account the impacts of more extreme weather events in designing and maintaining the roadbeds, ditches, culverts and bridges.
15. Encourage the designation and protection of scenic roads. Provide signage at intersections identifying these roads.
16. The Planning Board should impose appropriate conditions upon any new development on a designated “scenic road” to ensure its compatibility with the scenic qualities of the road.
17. The Planning Board, with input from the Conservation Commission, should consider whether any additional roads should be proposed at Town Meeting for “scenic road” designation.

18. The Selectboard and Highway Department should continue to regularly evaluate the maintenance needs of town roads, and budget to perform needed maintenance in a timely manner to ensure that deferred maintenance does not increase these costs.
19. Minimize the negative impacts of the transportation system on the natural and cultural environment.
20. Continue to employ approved dust control measures on gravel roads to reduce negative impacts to adjacent properties.
21. Perform periodic inspections to ensure best management practices are followed for the storage and use of fuels and other hazardous materials at the highway department.
22. Complete a comprehensive functional inventory of all gravel roads in order to determine whether current traffic levels and the use of these roads warrants paving these roads in the future.
23. Promote pedestrian access and safety by identifying and improving sidewalks in need of immediate repair. Consider the construction of sidewalks in new commercial and residential developments when appropriate. Maintain existing, designated crosswalks and related signage. Consider improved warning signage where necessary.
24. Consider bicycle-related improvements which include bike racks, road shoulder improvements and signage and bike routes.



**Drainage is key to minimizing road maintenance.
Ditches and culverts are essential.**



Annual grading is required on gravel roads.

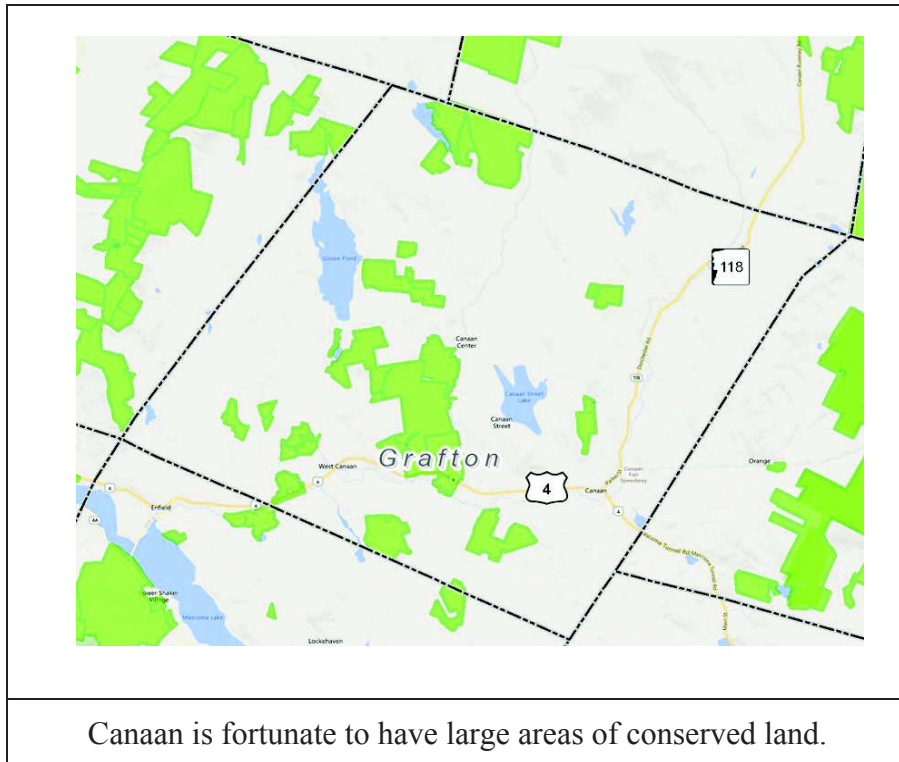


**Paving is expensive, but for high traffic roads, it is cost effective.
Gravel roads deteriorate rapidly with high traffic volume.**

IX. NATURAL RESOURCES and RECREATION

A. Overview

To preserve and foster Canaan's natural, scenic, and recreational resources, including surface waters, aquifers, wetlands, parks, agricultural land, forest land, open contiguous land, and public access.



The town is rich in conserved lands, town lands and conservation easement lands that are open for public use. They can provide healthful benefits to our population and enjoyable recreational activities. Working to encourage continued access and appropriate use of these lands will benefit the town.

B. Open Space / Public Access / Conservation Land Recommendations

1. Inventory all lands that are open for public use and make the inventory available to the public through the town website.
2. Rehabilitate and enhance town parks: Village Common, Meetinghouse Common, Depot Park, and Rail Trail access points.
3. Preserve and expand parkland, open space and public access in areas approved for public access.
4. Provide additional public open space along the shoreline of ponds and

rivers in town.

5. Educate the public on the benefits conservation land has for the municipality.
6. Support the granting of conservation easements through organizations such as the Upper Valley Land Trust. Enable use of the Conservation fund to buy land or the development rights to land for open space, agricultural, forestry, wildlife, conservation and recreational purposes.
7. The Conservation Commission and landowners should continue to work to conserve lands by purchase and through tax advantage conservation easements. The focus of land protection efforts should be on forest lands, wetland complexes and open space habitat and on habitat types not well represented in the current inventory of conserved lands including permanent forest openings, dense softwood areas, and on connectivity between such properties and already conserved parcels. Connectivity will protect wildlife travel corridors. One focus of this effort should be establishing linkages between existing conservation areas. The Conservation Commission should establish a priority ranking for these land protection efforts.
8. Conservation Commission should continue to actively manage the Canaan Town Forest for wildlife management, recreational use and education. Maintain and improve the recreational trails.
9. Private conservation initiatives should be encouraged by providing landowners with information about conservation easements.
10. Preserve and encourage agriculture, forestry, and wildlife through deed restrictions and conservation agreements to protect agricultural land.
11. Evaluate land that becomes available to the town from tax default for retention by the town for conservation or other municipal use.

C. Recreation Recommendations

1. Continue to cooperate with adjacent communities and the School District to share recreational resources and facilities.
2. Encourage the Recreation Committee to develop additional recreational programs and areas.
3. Work on ways to continue to provide a lifeguard for the swimming area at the town beach.

4. Encourage local organizations to continue to help with recreation programs and park improvement projects
5. Continue to update, distribute, and add to the town's website a town trail system map which would include routes to hike, walk, bike, ski, and snowmobile. A hiking map is at this link:
<http://www.canaannh.org/boards/recreation/heal-11x17map-032813qr.pdf>

A snowmobile map is at this link:
<https://www.mtcargigansnowmobile.com/trail-map/>
6. Work towards the development of an integrated multilayer map to include wetlands, aquifers, hiking trails, roads, snowmobile trails, flood plains, tax maps, rail trail, and etc.
7. Encourage the development of sustainably designed trails through the Canaan Town Forest and other lands open to the public to support recreational use, healthy activity, and tourism, subject to applicable local, state and federal guidelines.
8. Encourage civic organizations and schools to use developed trails for recreational, educational, and outreach programs.



Winter Activities are Varied and Popular

D. Waterways Overview

1. Canaan is fortunate to have a number of clean and attractive lakes and ponds. They provide for Town water supply, recreation and wildlife habitat. Canaan also has four 4th order streams that are under the jurisdiction of New Hampshire's Shoreland Water Quality Protection Act (RSA 483-B). They are: the Mascoma River, Indian River, Goose Pond Brook, and Orange Brook. These streams and their tributaries provide multiple benefits to our town, but also present risks from flooding and meandering.
2. Following is a list of Canaan's lakes and ponds.

<u>Lake / Pond Name</u>	<u>Acres</u>
a) Bear Pond	10
b) Bryant Pond	17
c) Canaan Street Lake	303
d) Clark Pond	136
e) Crystal Lake Brook Pond	28
f) Derby Pond	10
g) Enfield Reservoir	17
h) Goose Pond	554
i) Lary Pond	31
j) Little Goose Pond	13
k) Mirror Lake	22

E. Waterways Recommendations

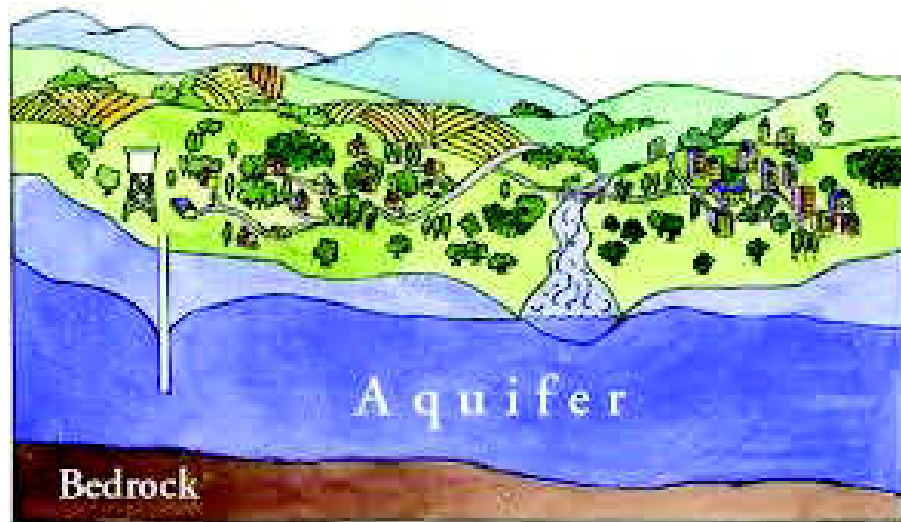
1. Create a Town ponds guide with information about access and natural resource characteristics of each pond.
2. Provide the Canaan Street Lake Beach with landscaping, life guards, and changing and toilet facilities.
3. Establish a regular and standardized water-testing program for Canaan Street Lake to protect the town's drinking water.
4. Encourage landowners to leave their shorefronts in a natural state. Homeowner associations on Goose Pond and Canaan Street Lake are already concerned with this issue. Support them in education of shorefront landowners so that DES regulations on shorefront development are observed.
5. Strengthen efforts to enforce all state wetlands and shoreline regulations,

especially Shoreland Water Quality Protection Act regulations. This includes both increasing awareness of developers and contractors, and engaging town officials such as police and the road agent who may be the first to see a disturbance.

6. Using the existing agreement, continue to deposit into the Conservation Fund land use change taxes from the removal of land from current use.
7. The Town's wetlands provide very important water quality protection and wildlife habitat. The Conservation Commission should inventory and evaluate the wetlands for functionality and vulnerability and those wetlands that meet the State's criteria for prime wetland designation should be so designated.
8. Study expanding a shoreline buffer zone along all water bodies not already under the jurisdiction of DES. This will protect the water bodies and increase property values throughout Canaan.
9. Prevent invasive species contamination at ponds with boat launch facilities with signage and/or inspectors.
10. To protect water quality and wildlife habitat and travel corridors, vegetative buffers should be established and maintained, through regulation, conservation easements and purchases, along lakes, ponds, rivers, streams and wetlands.
11. Insure a riparian buffer along streams with woody vegetation to reduce erosion, slow down flood waters and cool water temperatures.
12. Prevent the diversion and pollution of small and large tributaries that result from development on the lakeshore and adjacent areas.
13. Prevent stream channel modifications that can increase stream flow energy and erosion and cause increased downstream sedimentation and flooding
14. Work with Connecticut River Watershed Council, Mascoma Watershed Conservation Council, the Mascoma River Local Area Committee, and other similar organizations to manage and protect the watersheds.
15. Participate in the NH Volunteer River Assessment Program to collect and analyze data on Mascoma River Health.
16. Use LIDAR technology to get accurate elevations throughout the Mascoma and Indian River floodplain areas. Use this mapping to identify

and protect critical upstream wetland areas that can absorb heavy runoff and flooding.

17. Take steps to inventory and protect vernal pools.
18. Continue to follow best management practices for salt storage and application.
19. Investigate the feasibility of establishing and maintaining additional sediment basins along roads to reduce sediment runoff into surface waters.
20. Prepare a culvert inventory for the Town, identifying structural condition of each. Evaluate these culverts for adequate sizing for flood flows and debris clearance, as well as the condition of adjacent natural streambeds and perched outlets.
21. Adopt and enforce additional regulations that are designed to protect water quality. Develop watershed and Aquifer Protection Zones to prohibit or control any use that would potentially introduce either point or non-point pollutants to Canaan's aquifers and water sources.
22. Consider a shorefront ordinance for Canaan Street Lake that will prevent new septic or other potential pollution sources within a shoreline buffer zone of this water body that serves as Canaan's reservoir.
23. Identify steps towards additional protection of the local aquifers. Options include Implementing selected Best Management Practices within aquifer recharge areas, protecting the overlying land, public education, and land use restrictions.



Typical Aquifer

24. Support the efforts of the Canaan Street Lake Association and the Goose Pond Association as they work to protect the water quality of the two largest water bodies in Canaan. Among other activities, these two associations participate in the Volunteer Lake Assessment Program (VLAP), for which they collect several water samples every year, transport those samples to a state certified lab, pay for laboratory testing of numerous water quality health indicators, and review the test results. Of particular note is that chloride levels have been increasing in recent years, mainly due to the application of salt to roads within the watersheds of these two lakes. More needs to be done to curtail the use of salt or to find alternative methods to maintain safe roads in the winter.
25. In accordance with RSA 674:2 III d, the entire Canaan Street Lake Watershed Protection Plan dated August 2006 is incorporated into this master plan, and may be viewed at
http://canaannh.org/boards/source_water_protection_committee/swpc-watershed-protection-plan2006.pdf
26. Expand the Watershed Protection Plan to include all town lakes, ponds, streams, rivers, watersheds, and aquifers.

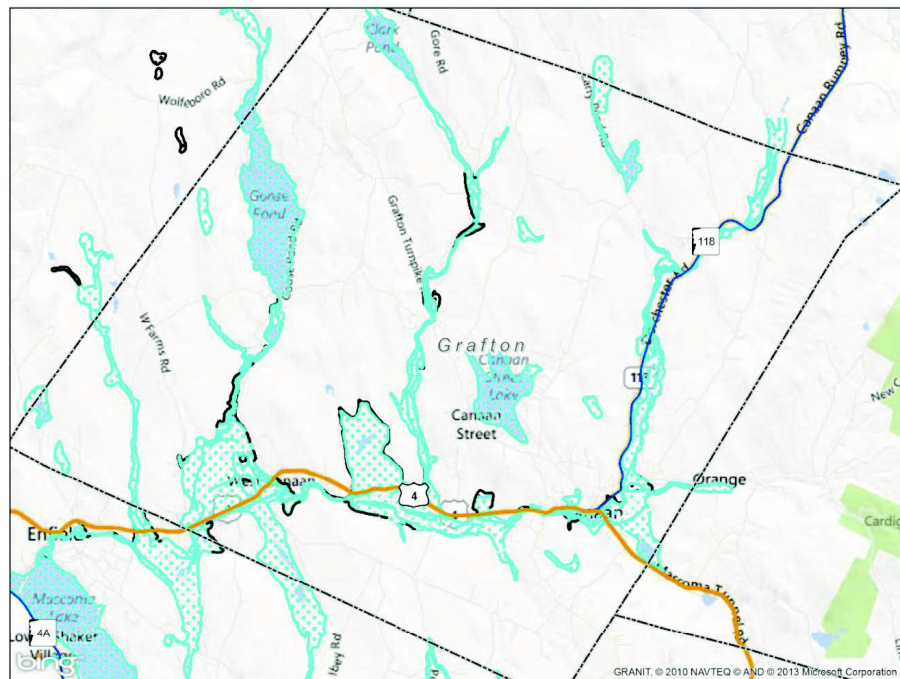
F. Wetlands Overview

1. Canaan has widespread wetland areas and these should be protected and valued. Their value includes protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters and maintaining

surface water flow during dry periods. These valuable functions are the result of the unique natural characteristics of wetlands.

G. Wetlands Recommendations

1. Educate the community, with special emphasis on landowners, on the benefits of wetlands and vegetated buffers, and on the benefits to the community of regulations to protect them. Some property owners are aware of state wetlands and shoreline regulations only when they apply for permits to build or when they learn that they have committed violations. The possibility of including this type of education information, e.g., about common wetlands and shoreline regulatory infractions, in mailings, email, and websites should be explored. Brochures and posters on how to enhance wetlands protection and restore vegetated buffers should be displayed at the town office. The Conservation Commission should sponsor one or more lectures on wetland and shoreline regulations each year, and assist with field trips for students.



Aquifers and Surface Waters

2. Research and consider possible approaches to provide landowners with regulatory incentives to protect and restore vegetated buffers along all of the town's wetlands, smaller brooks, and rivers.
3. The Conservation Commission should inventory and evaluate the wetlands for functionality and vulnerability and those wetlands that meet the State's

criteria for prime wetland designation should be so designated. Although wetlands are protected by Town, State and Federal regulations, a concerted effort should be made to permanently protect the most important wetlands through outright acquisition or conservation easement.

4. Consider the adoption of a town wetlands conservation ordinance.
5. Continue to monitor for compliance issues, such as permits to cut and erosion control, to ensure that wetlands are being protected.

H. Forest Land Recommendations

1. Canaan's remaining areas of intact, interconnected, ecologically significant forest play a strong role in the Quabbin to Cardigan Initiative. They provide habitat for wildlife and an important north-south corridor for wildlife adapting their ranges to a changing climate. They ameliorate the weather and climate change, and they intercept and store precipitation. Forest products provide income for forest landowners.
2. Increase education for forest landowners. Opportunities include providing copies of best management practices guides, a model harvest contract, and county forester contact information to large landowners, and to those applying for building permits or subdivision approval.
3. Encourage landowners to manage their forest lands for timber, wildlife habitat, and public recreation where appropriate.

I. Wildlife Recommendations

1. Ensure that landowners are aware of the resources available for learning how to improve habitat on their land such as the UNH Cooperative Extension county forest resources educator, NH Fish and Game regional biologist, UNH Cooperative Extension wildlife biologist, Conservation Commission members, and NH Audubon.
2. Develop a wildlife corridor map, and direct development so that corridors can be kept open.
3. Dense softwood stands provide significant benefits for deer, moose and other wildlife populations. Protect existing deer yards and wildlife travel corridors, as follows. Provide information to landowners on the importance of maintaining existing stands of dense softwood for the benefit of deer and other wildlife populations. Identify areas that would be appropriate places to extend the existing softwood stands and connect patches of softwood in a continuum. Encourage willing landowners to

strengthen the network of dense softwoods particularly in areas abutting wetlands, streams and other water bodies.

4. Provide educational material to homeowners, and to those intending to build, on methods for minimizing the negative impacts of residential use on wildlife.
5. When replaced or installed for the first time, culverts and bridges should be designed to accommodate aquatic wildlife passage.

J. Development Planning Recommendations

1. Discourage development in remote areas. Forests, rugged terrain, natural scenic beauty and large tracts in single ownership characterize many of these undeveloped areas. They are also far from the center of town, making it both difficult and expensive for the town to provide them services. Minimum lot sizes should be fairly large in outlying areas.
2. Encourage forestry, agriculture, and low-density housing for outlying areas. By encouraging these uses and discouraging development, the town will
 - a) encourage residents to live in areas where emergency services can be provided quickly and economically,
 - b) reserve areas for commercial forestry and agriculture,
 - c) provide areas for outdoor recreation,
 - d) conserve wildlife, especially those species which need to roam over large areas,
3. Ensure that any future zoning ordinance specifies that existing farms and future farms in rural areas will not be unduly restricted with respect to odor, light and noise.
4. Encourage cluster development that will reserve common permanent areas of open space in all major proposed residential developments. Land set aside for parks and playgrounds should be reserved for the common use of all property owners in the subdivision by covenant in the deed and should be reasonable size, character and location for neighborhood playgrounds or other recreational uses. Cluster housing under regulations which would intensify density beyond that normally permitted and require useable open space will allow developers to maximize the return on their investments by clustering housing units and leaving the remaining land in permanent open space.

5. Ensure that encroachment on wetlands and impacts on surface waters are considered in the review of development. For example, loading areas where toxic chemicals are handled should be paved, bermed and covered to contain spills
6. Require a sediment and erosion control plan for all developments, including driveway construction. Stormwater management techniques such as rain gardens and low impact development should be incorporated in the development plans. Consider strengthening stormwater regulations to reduce the potential for erosion and sedimentation.
7. Initiate an inspection process for monitoring site development. Provide for professional monitoring of site development and construction activities to ensure that erosion controls are in place and effective.
8. Avoid locating development on or near sensitive resources such as wetlands, steep slopes, surface waters, and within aquifer recharge areas.
9. Encourage low density development in areas of town where slope, soils, or other natural features make the land less suitable for development
10. Consider the development of a post construction stormwater infrastructure inspection and reporting program as a condition to subdivision approval.
11. Limit the grade of site access to less than or equal to 10 percent.

K. Additional Recommendations

1. Initiate program of training for and by Conservation Commission members on the identification of invasive species.
2. Uses on steep slopes can have detrimental impacts; the planning board needs to develop better erosion control regulations for added protection in sloped areas
3. Review flood ordinance and related laws and regulations to insure we have adequate protections and controls. NHDES Innovative Land Use Planning Techniques contains a floodplain ordinance template which could be adapted to the town's needs.
4. Monitor the reach of floodwaters during and after storm events to augment NFIP mapping with local knowledge
5. Continue to conduct Household Hazardous Waste Collections.

6. Provide educational materials to homeowners to inform them about septic system maintenance and the alternatives to hazardous chemicals.
7. Implement a septic system monitoring, inspection, and compliance program. Require septic cleaners to notify the Town.
8. Consider possible approaches for developing a voluntary residential well water quality testing program. Study ways to assure wells are registered with the state.
9. Ensure that large water users are restricted to areas where drawdown will not negatively impact other users.
10. Efforts to conserve scenic views should be initiated. It should be recognized that scenic views are an important part of the tax base, as well as attracting visitors, tourists, and vacationers with associated economic benefits for the town. As such, scenic viewsheds should be protected as much as practicable.
 - a) Identify important viewsheds in Canaan.
 - b) Voluntary scenic easements should be encouraged.
 - c) Consider regulations to preserve important scenic views wherever possible.
 - d) Adopt and implement flexible zoning techniques for site development in a manner compatible with maintenance of important scenic resources when possible. This includes both clustering/siting homes away from open areas that provide a foreground for the view, and also siting homes that are within important viewsheds in a manner that provides the maximum screening.
 - e) Adopt and implement design guidelines regarding clearing/landscaping, exterior colors, lighting and reflective glass for development on ridgelines and hilltops within important viewsheds.
 - f) Access to scenic views should be considered in forest management plans.
 - g) Continue to manage the town's roadsides with sensitivity toward the contribution trees and stone walls make to the highly valued scenic quality of the town.



One of many scenic lake views in Canaan



Canaan Town Beach



Canaan Street Lake

X. PRESERVING OUR HISTORY

A. Recommendations

1. Support the Historic District Commission in the preservation of cultural resources, and particularly of structures and places of historic, architectural and community value. The heritage of Canaan will be safeguarded by:
 - Preserving districts which reflect elements of its cultural, social, economic, political, community and architectural history;
 - Conserving property values in such districts;
 - Fostering civic beauty;
 - Strengthening the local economy; and
 - Promoting the use of historic districts for the education, pleasure and welfare of the citizens of Canaan.
2. Establish a Heritage Commission in accordance with RSA 673 for the proper recognition, use, and protection of resources, tangible or intangible, primarily man-made, that are valued for their historic, cultural, aesthetic, or community significance within their natural, built, or cultural contexts throughout Canaan. The Heritage Commission will have the power to accept gifts or property and manage these to conserve or use cultural resources. The commission may be a separate commission or these duties may be merged with the Historic District Commission.
3. Working with property owners, investigate National Register listing for significant local structures and sites. Develop priorities for the future listing of properties on the State Register and the National Register.



The Town has a collection of wonderful theatre stage backdrop drapes that need preservation.



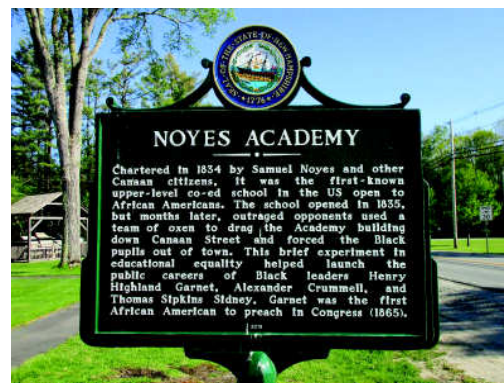
North Church built 1828

4. Ensure that any building change, site improvement, or any other alterations to a Town-owned building respects the historical qualities of the structure.
5. Locate and map sites and/or cellar holes of original schoolhouses, places of business, industries, and homes. Explore placing markers at key historic sites and structures.
6. Locate, identify, catalogue, preserve and protect town records, documents, manuscripts and artifacts, and provide a suitable and safe repository for them.
7. Encourage collection, cataloging and preservation of early photographs for their protection, research and enjoyment by current and future residents. Encourage photography of townspeople and structures for permanent reference.
8. Prepare a historic resources inventory with information and photographs updated periodically to indicate changes to buildings, including remodeling, fire, demolition or changes to surroundings.
9. Document, preserve, upgrade and protect the town's graveyards and private burial grounds. Prepare user-friendly website access to cemetery maps and a database of GPS coordinates for gravesites with their identification.
10. Facilitate preservation of oral and written histories of the town, and make this information easily available to the public through the town library and the internet.

11. Continue to assure communication and cooperation between the Historic District Commission and town residents. This will keep owners up-to-date on developments affecting the District and the benefits of district designation.
12. Provide support to the Canaan Historical Museum and the collection of historical artifacts, since this will provide accessibility to town residents and future generations. Support and promote its research into and protection of all of Canaan's historic resources. Reassess the feasibility and funding requirements of opening the second floor of the Museum building for exhibit expansion with public access.



Museum is located in Union Academy



Union Academy built 1839 following Noyes Academy destruction.



History day provides annual tour of Museum and Historic District for school children.

13. Where possible, carry out Town road maintenance with care to protect the historic stone walls along Town roads.
14. Amend the Subdivision Regulations to insure that all applications include the identification of all historical resources, such as buildings, structures, cemeteries, stone walls, and archaeological sites, both on-site as well as contiguous to the subject parcel. Develop a protocol for the identification of archaeological sites. Include historical resources on the application checklists. If historical resources are present, include the extent of the project's impact and mitigation measures as part of the application materials.
15. Require that reasonable efforts be taken in subdivision applications to preserve historic farmsteads with open space areas.
16. Explore adoption of RSA 79-D Discretionary Preservation Easements to preserve agricultural structures and promote barn easement tax incentives to barn owners.



Canaan has many farm buildings, but few have been restored

17. Promote the use of preservation easements, particularly in conjunction with conservation easements, as a means to protect historic homes and farmsteads. Consider the preservation of historic farmsteads through conservation and preservation easements when evaluating subdivision applications.

18. Explore solutions that mitigate the deterioration of historic properties within the Historic District.
19. Explore the creation of a historic structure demolition-delay ordinance
20. Support the Meetinghouse Committee in their efforts to preserve this historic structure and make it available for public meetings and events.



Meetinghouse built 1793



Extensive renovations over last 50 years.



Renovation of meetinghouse tower 2012

XI. ENERGY and PUBLIC UTILITIES

A. Overview

Energy from hydropower from the Mascoma River was essential to the early growth of Canaan. Sawmills and grain mills were established early at the outlet of Hart's Pond (now Canaan Street Lake). These led to the residential growth and small industries in the Factory Village area, near Cardigan Mountain School. Canaan's residents relied on wood burning for heating.

With the arrival of rail transportation the town began to rely on coal for energy. At the end of the 19th century electric power arrived and soon after that petroleum-based transportation. All of these advances increased our dependence on using fossil fuels imported from out of town, out of the state, and often from out of the United States.

Canaan has abundant but underutilized renewable energy resources, especially biomass but also hydro, solar and wind. We should work toward an energy future which will increase energy savings for residents, businesses, and municipal functions, ensure a robust and stable energy economy, and reduce the impacts of greenhouse gas emissions that result from a fossil fuel-dependent economy. We can do this by capturing more of the energy we use from local sources and reducing energy waste for residents, businesses and municipal functions. This should move us toward a robust and stable energy economy.

B. Energy Goals

To realize Canaan's plan the town should move toward a goal of producing as much renewable clean energy from local and/or regional sources as possible without adversely affecting municipal expenses. That will be possible if we:

C. Energy Recommendations

1. Work toward Town compliance with the New Hampshire Climate Action Plan,
https://www.des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/nh_climate_action_plan.htm.
2. Establish a Canaan Town Energy Committee and empower it to recommend actions to promote Canaan's energy efficiency and to help the Town save money through energy conservation, weatherization, and renewable energy sources.
3. Implement a Town buying strategy of Energy Star equipment and products and environmentally sensitive office products where cost-effective.

4. Develop a culture of energy efficiency and conservation within the Town's municipal, commercial, institutional, and residential communities.
5. Use the services of New Hampshire's Community Development Finance Authority's Municipal Energy Reduction Fund to help improve the energy efficiency of Canaan's municipal buildings, street lighting, water and sewage treatment facilities.
6. Identify Town sites suitable for either roof-mounted or free-standing solar collection, and analyze the potential cost and benefit of installations and use of group net metering to reduce town energy purchases.
7. Improve the energy efficiency of town buildings, and promote similar efficiency measures for the commercial and residential sectors, because energy-efficient buildings are a critical component of energy conservation.
8. Consider the ecological and social impacts of specific types of alternative fuels during replacement decisions for town vehicles. Purchase town vehicles that are fuel efficient and whenever possible that are powered by electricity.
9. Move to the use of LED or other energy efficient street lights for better color rendering and energy savings.
10. Provide street lights with controls for half-night lighting, providing for safe streets with reduced energy use. Other exterior lighting should be evaluated for control by timers and light sensors to reduce usage when not needed, leaving only low-level security lighting on all night.
11. Continue to track and assess energy and water use across all municipal buildings and vehicles.
12. Develop wind energy and solar energy ordinances that will promote the use of wind and solar energy in Canaan in ways that are safe and aesthetically sound.
13. Provide a link on the Town website to the N.H. Public Utility Commission advice page on Choosing an Energy Supplier, at <https://www.puc.nh.gov/Consumer/Choosing%20an%20Energy%20Supplier.html>.
14. Investigate methods to limit the installation of transmission lines, 345 kV or higher, along our scenic roadways.

15. Develop a system to allow tax credits for energy efficiency or clean, low-polluting renewable energy investments and improvements. Encourage townspeople and developers to use clean, low-pollution local and/or renewable resources and technology on a sustainable basis.
16. Install occupancy-sensing light switches where appropriate in the library, senior center, and all other municipal buildings.

D. Town Water and Sewerage Recommendations

1. To protect the Canaan Village drinking water source in Canaan Street Lake study the implementation of a sewer system around the lake.
2. Water Commissioners should continue to monitor the needs and impacts created by new development proposals.
3. Monitor and support Water Department plans to continue delivery of water that meets state and federal standards.
4. Plan for the phased replacement of the water supply line from the Canaan Street Lake reservoir to Canaan Village and other aging water infrastructure.

E. Wind Energy Recommendations

1. Utilities are increasingly looking to wind power to expand their rate bases or replace aging, inefficient fossil fuel power plants. The State of New Hampshire encourages new wind generation as an alternative to importing fossil fuel from outside the state. This revenue source could help strengthen Canaan by reducing property taxes.
2. Wind power potential maps show limited opportunity for a municipal or commercial wind energy project in Canaan. Some of the higher elevations in the eastern corner of Canaan have moderate to fair wind energy production potential.
It is likely that these would likely only useful in a multi-town project under the jurisdiction of the New Hampshire Site Evaluation Committee (SEC) process. While Canaan has few ridges suitable for wind energy production, the town needs to assure that any development that does occur will be managed to benefit the Town as well as the State and region.



3. In this image you can see the hilltops looking east of Canaan Village. Cardigan Mountain is behind the deciduous tree and Firescrew Mountain is just to its left. Both of these hills are on New Hampshire State Forest land and have not been available for wind energy development. Some of the lower hills to left are within Canaan, and these were the hilltops whose potential was considered by the “Spruce Ridge” project. For effective utilization of Canaan’s wind resource, the Town will:
 - a) Support representation of Canaan’s interests before New Hampshire’s Site Evaluation Committee (SEC) hearings for any utility-scale wind energy system affecting the town.
 - b) Carefully enforce the requirements of the Town’s Large Wind Energy Systems ordinance for systems producing from 1 MW and 30 MW of electrical power, should such a system be proposed in Canaan and the SEC not have jurisdictional authority.
 - c) Consider preparing an ordinance for town consideration to provide an approval process for development of small wind energy systems, capable of producing up to 1 MW of power, so that this resource can be utilized safely and without adverse impacts on surrounding properties.

F. Solar Energy Recommendations

The great reduction in the cost of solar collection infrastructure means that, even with the limited solar energy potential in Canaan, there is value in promoting solar

energy collection, both for residential and commercial use and for feeding into the electric grid for wider use. To move toward that goal the Town would:

1. Provide tax abatements for residential photovoltaic placement.
2. Study the need for setbacks, noise control and visual buffers around larger solar collector fields.



A Residential SolarSystem in Canaan



The large commercial solar farm at Cardigan Mountain School

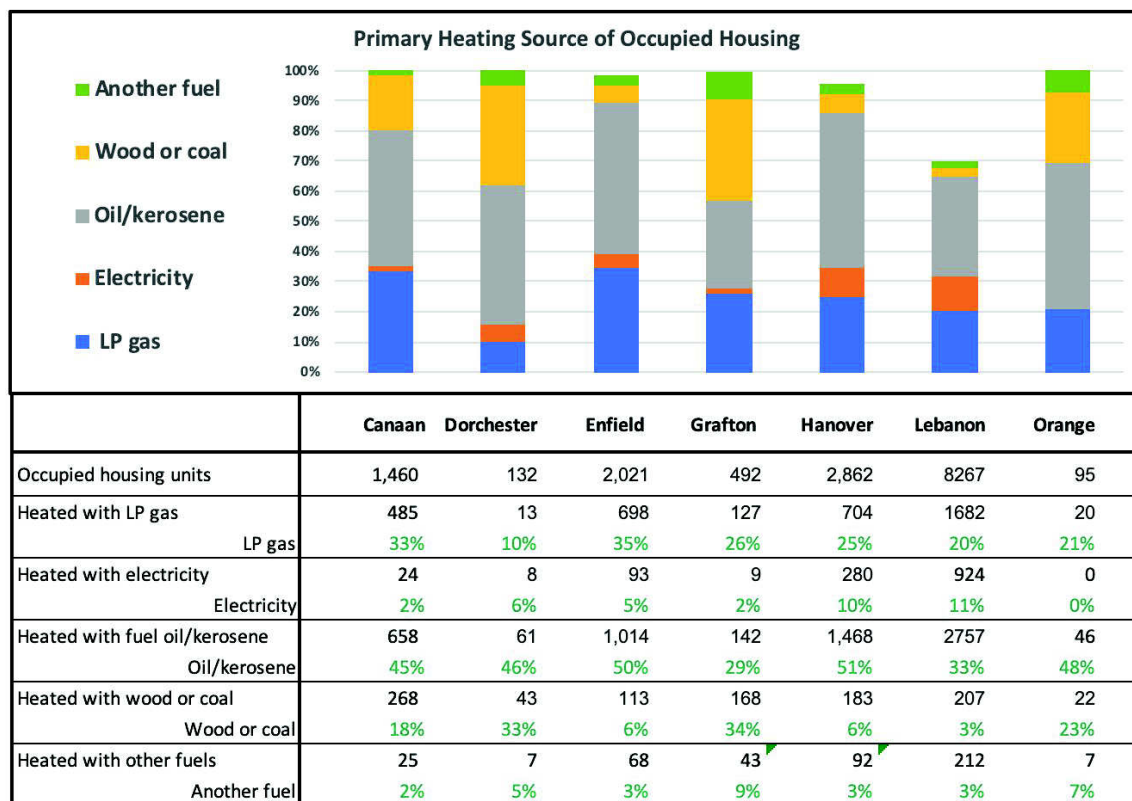


Installing Rooftop Solar in Canaan

G. Heating Recommendations

Census data from 2016 show that 332 Canaan households, or about 22%, use wood as a home heating fuel. This is a significantly higher rate than many other towns in the Upper Valley and much higher than the 4.3% rate for the State. Burning wood cleanly is good, but to reduce pollution from wood burning the Town could:

1. Encourage residents to convert or replace older wood stoves that do not comply with cleaner-burning EPA-certified standards.
2. Prohibit outdoor wood boilers unless they meet strict emission control standards.
3. Encourage weatherization programs which can assist residents with reduction of their energy use.
4. Evaluate use of heat pumps in new residential and business construction.
5. Find ways to encourage sugar houses to use reverse osmosis or other techniques that reduce energy consumption.



Wood is used as a primary heat source in a high percentage of homes in Canaan and in the small Mascoma towns. Many of these wood stoves are not compliant with current EPA standards governing the manufacture and sale of wood stoves. The smoke from these non-compliant stoves may be responsible for the high occurrence of asthma among our residents.

H. Communications Overview

Use of land-line communication is decreasing in Canaan as in other parts of the nation. Infrastructure to provide communication services through the Internet, cell towers and other broadband services has become essential for educational, commercial and social strength of the town. Public safety agencies, such as ambulance, fire and police departments, rely on communication facilities to provide essential services.

Access to high-speed communications has enabled individuals to pursue home occupations and home businesses or to simply work from home. This allows for a higher potential for commercial development in rural areas that had not been economically viable before the advent of rural broadband communications.

In order to maximize access to quality high-speed communication resources the town should:

I. Communications Recommendations

- 1.** Survey and map high-speed internet and cell phone coverage through all areas of Canaan, since Canaan's topography constrains the coverage areas of cell phone service.
- 2.** Explore and negotiate desirable options when the time comes for reauthorization of cable network services including television, telephone and Internet data services.
- 3.** Provide strong security to town computers including library computers to protect data and computer integrity.
- 4.** Be open to the possibility of accessing broadband services through the AT&T high-capacity cable, joining New Hampshire FastRoads, or other regional communications initiatives.
- 5.** Investigate the options of using Meeting House and church towers to provide stronger cell services, while considering aesthetics and radiation concerns.



Cell Service Tower off Grist Mill Hill Road

XII. NATURAL HAZARDS and EMERGENCY PLANNING

A. Overview

Canaan is vulnerable to a variety of natural and human-made hazards. The hazards affecting the Town of Canaan are dam failure, flooding, hurricane, tornado, thunderstorm (including lightning and hail), severe wind, extreme winter weather (including extreme cold and ice storms), earthquake, landslide, erosion, drought, extreme heat, wildfire, radon and hazardous materials spills.

The Hazard Mitigation Plan (HMP), updated and approved in 2011 (2016 update in process), is a document that sets out specific proposed actions to mitigate known hazards and work to minimize danger to the public before an incident. This chapter contains excerpts of the HMP and serves as a strategic planning tool, for use by the Town, in its efforts to reduce future losses from natural and/or man-made hazard events before they occur. The purpose of the Emergency Operations Plan (EOP), written in 2014, is to facilitate the delivery of all types of emergency response and to help deal with the consequences of significant disasters. Elements of the EOP are also included in this chapter.

B. Canaan's Hazards:

- 1. Dam Failure:** Although there are 22 dams in Canaan, there are only three that might cause major damage should they fail. This includes Goose Pond, Enfield Reservoir in West Canaan, and Smith Pond dam in Enfield which would cause major damage in Canaan.
- 2. Flooding:** Floods in the area are most likely to occur in the spring due to the increase in rainfall and snowmelt; however, floods can occur at any time. A sudden winter thaw or a major summer downpour can cause flooding. A major flood would cause substantial damage in Canaan Village, along route 4, and route 118. Since 1973 FEMA has declared a flood disaster 20 times in New Hampshire.



The Great Flood 1896

3. **Hurricane:** A hurricane is an intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph or higher. Over the years there have been several hurricanes that have impacted New England and New Hampshire, including Canaan with wind and flood damage. Since 1938 there have been 11 hurricanes within 150 miles of Canaan.
4. **Tornado & Downburst:** A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. These events are spawned by thunderstorms and, occasionally by hurricanes, and may occur singularly or in multiples. Significantly high winds occur especially during tornadoes, hurricanes, winter storms and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. Since 1950 there have been 18 events.
5. **Thunderstorms:** A thunderstorm is a rain shower during which you hear thunder. Since thunder comes from lightning, all thunderstorms have lightning. A thunderstorm is classified as "severe" when it contains one or more of the following: hail, three-quarter inch or greater, winds gusting in excess of 50 knots (57.5 mph), tornado. These storms are common, and damage includes falling trees, fire, and electronic equipment failure.

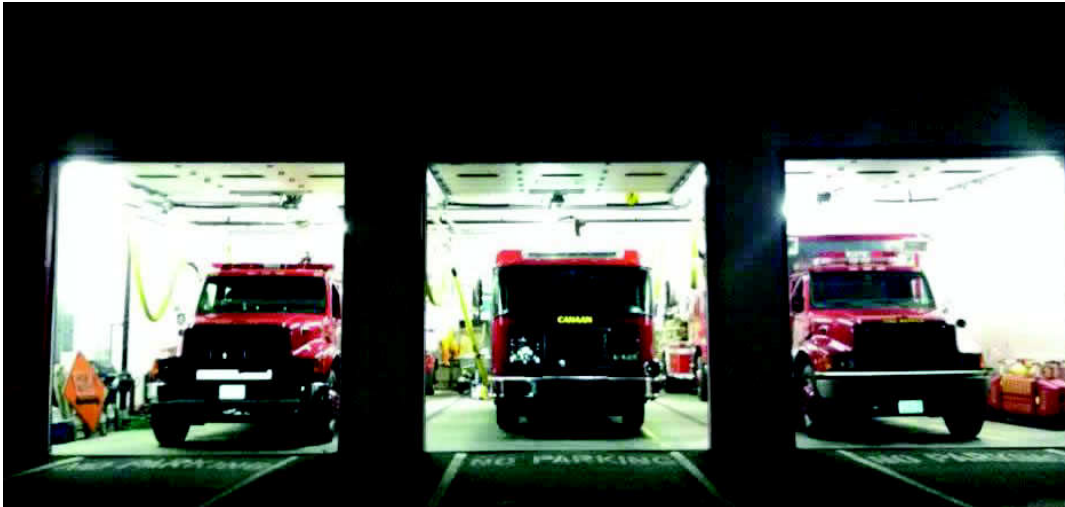
- 6. Severe Winter Weather:** Ice and snow events typically occur during the winter months. Canaan has heavy snowstorms, blizzards, extreme cold, ice storms and Nor'easters that occur and can cause loss of life, extended power outages, downed trees and other property damage.



Severe winter weather

- 7. Earthquakes:** There is a 10% probability of an earthquake in 50 years with moderate perceived shaking and very light potential damage. Since 1931 there have been 17 events within 30 miles of Canaan.
- 8. Drought:** A drought is defined as a long period of abnormally low precipitation, and costs can include loss of agricultural crops and livestock.
- 9. Extreme Heat:** Extreme heat would impact the entire town, though it would have less impact on those with air conditioning in their homes. The costs of extreme heat are most likely to be in human life, and the elderly are especially susceptible.
- 10. Erosion:** Soil erosion, although a natural process, can be greatly accelerated by improper construction practices. Because of the climate in New Hampshire and the general nature of our topography, eroded soils can be quickly transported to a wetland, stream or lake. There have been several town roads washed out in association with major storms, and many private road problems throughout town caused by erosion.

- 11. Wildfires:** Wildfires are defined as any unwanted and unplanned fires burning in the forest, scrub or grass. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. Wildfires are unpredictable and usually destructive, causing both personal property damage and damage to community infrastructure and cultural and economic resources.



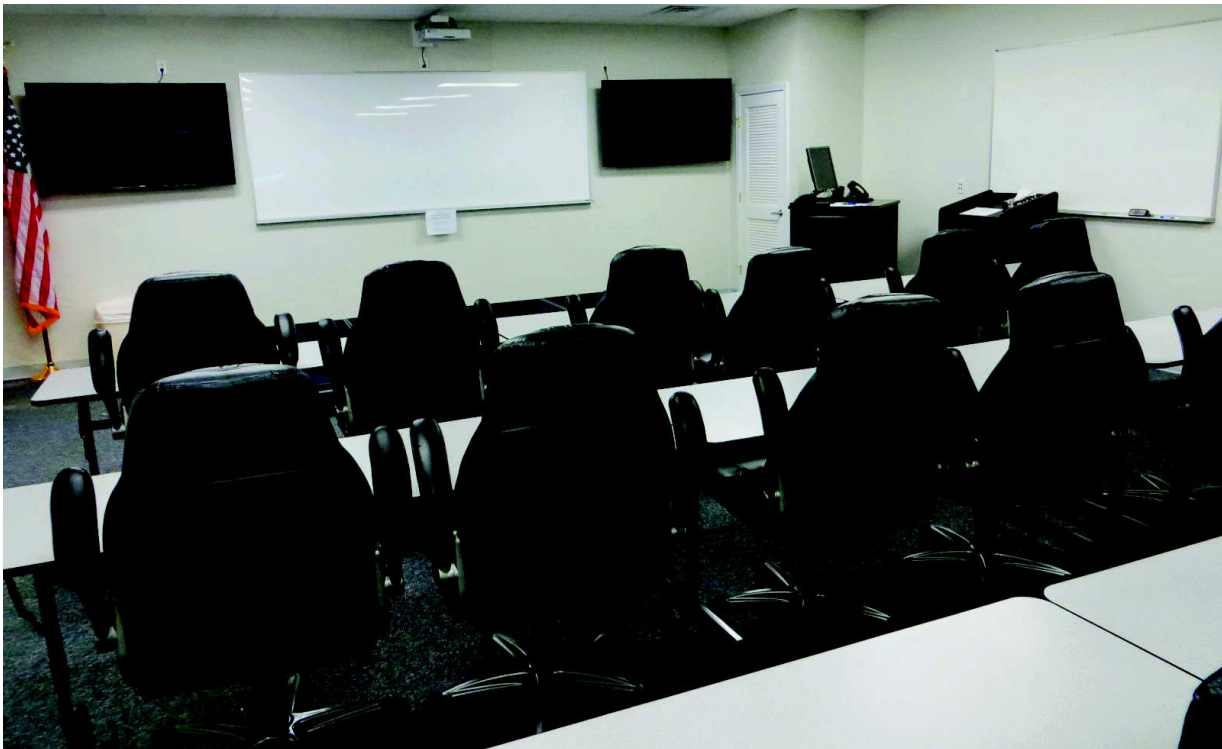
Canaan Fire Department

- 12. Natural Water & Air Contaminants:** Radium, radon and uranium are grouped together because they are radionuclides, unstable elements that emit ionizing radiation. These three particular substances are a health risk only if taken into the body by ingestion or inhalation. They occur naturally in the environment: uranium and radium as solids in rock while radon exists as a gas. Radon gas can also be found in the soil. Openings between the soil and buildings, such as foundation cracks and where pipes enter, provide conduits for radon to move into structures. There are many other natural contaminants, such as arsenic, which can render drinking water unsafe.
- 13. Hazardous Materials Spills:** Hazardous materials spills or releases can cause loss of life and damage to property. Short or long-term evacuation of local residents and businesses may be required, depending on the nature and extent of the incident. Spills are possible in transportation as there is substantial through traffic on Route 4. In addition, heating fuel is delivered to homes on many of the town's roads.

- 14. Terrorism:** While there have been no events in the past, the risk of terrorism does exist in the future.

C. Emergency Planning

1. The Canaan Emergency Operations Plan (EOP) establishes a framework for local government to provide assistance in an expeditious manner to save lives and to protect property in the event of a disaster or emergency situation. The Plan outlines the planning assumptions, policies, concept of operations, organizational structures and specific assignments of responsibility to the Town departments and agencies involved in coordinating the Local, State and Federal response activities.



Emergency Operations Center

2. The EOP is applicable to natural disasters such as earthquakes, hurricanes and tornadoes; man made incidents such as civil disturbances; and technological situations such as hazardous materials incidents, power failures, nuclear power plant incidents, and national security emergencies.

3. The EOP describes the basic mechanisms and structures by which Canaan would respond to potential and/or actual emergency situations. To facilitate effective response operations, the EOP incorporates a functional approach that groups the types of assistance to be provided into Emergency Support Functions (ESF). Each ESF is assigned a primary or co-primary agency, which has been selected based upon statutory authority, current roles and responsibilities, resources and capabilities within the particular functional area. Other agencies have been designated as support agencies for one or more of the ESF(s) based upon their expertise, resources and capabilities to support the functional areas.

- a) Emergency Support Functions (ESFs)

- (1) Transportation
- (2) Communications and Alerting
- (3) Public Works and Engineering
- (4) Fire Fighting
- (5) Information and Planning
- (6) Mass Care and Shelter
- (7) Resource Support
- (8) Health and Medical Services
- (9) Search and Rescue
- (10) Hazardous Materials
- (11) Food and Water
- (12) Energy
- (13) Law Enforcement and Security
- (14) Public Information
- (15) Volunteers and Donations
- (16) Animal Health and Sheltering

- b) Departments, positions and organizations that would likely play a role in emergency operations include:

- (1) Town Administrator and Board of Selectmen
- (2) Emergency Management Director & Deputy
- (3) Police Department
- (4) Fire Department
- (5) Canaan Ambulance
- (6) Highway Department
- (7) Health Officer
- (8) Building Inspector
- (9) Water and Sewer Department
- (10) Transfer Station

- (11) Recreation Department Director
 - (12) School District
 - (13) Hanover Dispatch
 - (14) American Red Cross
 - (15) Regional Coordinating Committee (UVRPHN)
 - (16) Area Hospitals
4. The Emergency Response Organization is composed of inter-department coordination and operational support elements from participating departments. ESFs are arranged into the following structure:
- a) Command and Control
 - b) Operations
 - c) Information & Planning
 - d) Logistics
 - e) Administrative & Finance
5. The EOP unifies the efforts of government, volunteers and the private sector for a comprehensive approach to reducing the impact of emergencies and disasters on the Town.



Canaan Ambulance



Canaan Police

D. GOALS AND RECOMMENDATIONS:

- 1. Hazard Mitigation Plan:** Reduce the potential impact of natural and man-made disasters on the Town:
- a) Emergency Response Services;
 - b) Critical Facilities;
 - c) Infrastructure;
 - d) Private property;
 - e) Economy;
 - f) Natural environment;
 - g) Historic treasures;
 - h) General Population - its citizens and visitors.

2. Hazard Mitigation Plan Recommendations:

- a) Every five years review and update the Town's Hazard Mitigation Plan.
- b) Take mitigating actions to eliminate or reduce the probability of some disaster occurrences. Include long-term activities that lessen the undesirable effects of unavoidable hazards or reduce the degree of hazard risk, as identified in the Hazard Mitigation Plan.
 - (1) Specifically, the town should seek immediate funding and to replace the Upper Rail Trail trestle bridge as recommended by HEB Engineers Inc, in their report dated July 25, 2018.
 - (2) Long term planning to replace the Lower Rail Trail trestle bridge should be undertaken, since HEB Engineers found portions of this bridge to be failing and assessed the waterway opening to be inadequate for the Indian River.
 - (3) Flood mitigation at the Rte 4 crossing of the Indian River just East of Canaan Village should also be addressed. One option is to pursue installation of large concrete culverts under Rte 4 by the State of NH as recommended by Headwaters Hydrology PLLC in the extensive engineering study they performed in 2016.
- c) Improve the Emergency Preparedness and Disaster Response and Recovery Capability.
- d) Utilize a community education program to reduce liabilities with respect to natural and manmade hazards.
- e) Work in conjunction and cooperation with the State of New Hampshire's Hazard Mitigation Goals.

3. Emergency Operations Plan: Integrate planning efforts in the maintenance, implementation and exercising of the EOP with all primary, co-primary and support agencies with emergency responsibilities whether Federal, State, local or private.**4. Emergency Operations Plan Recommendations:**

- a) Regularly review and update the Town's Emergency Operations Plan.
- b) Utilize annual training and exercise to evaluate the capability of the Town to respond to minor, major and catastrophic disasters. The Emergency Management Department (EMD) will coordinate the training of local and volunteer personnel on their roles and responsibilities in the four phases of emergency management (i.e., preparedness, response, recovery and mitigation).

- c) Use preparedness activities to develop emergency response capabilities. Planning, exercising, training, mitigation, developing public information programs and alerting and warning are among the activities needed to ensure the most effective and efficient response in a disaster.
- d) Maintain a suitable EOC facility for centralized direction, coordination and control of emergency operation.
- e) Provide adequate and required facilities and equipment for Fire, Rescue and Police and training for emergency operations and response.
- f) Provide for an emergency dispatch service that meets the needs of all town services for essential communication during emergency events.
- g) Explore the use of GIS for Emergency Planning.

Appendix A: Related Documents

The following documents were valuable information sources for the master plan, and should be consulted when implementing master plan topics.

Canaan Community Profile Report, University of New Hampshire Cooperative Extension, November 16 & 17, 2001

Available at Canaan Town Library, in the vertical file.

Mascoma River Watershed Natural Resource Inventory,
Prepared for: The Mascoma Watershed Conservation Council,
Prepared by: The Society for the Protection of New Hampshire Forests
March, 2003

https://www.uvlsrpc.org/files/6513/6025/7748/Natural_Resource_Inventory_Mascoma_Watershed_Cons_Council_March03Report.pdf

Natural Resource Inventory of the Bear Pond Natural Area 2003-2005

Funded by Mascoma Watershed Conservation Council
In contract with New England Institute for Landscape Ecology
Submitted February 2006

CD on file in Canaan Town Library

Goose Pond Watershed Analysis 1998-2000

Prepared by the University of New Hampshire (UNH) Center for Freshwater Biology and Cooperative Extension Water Resource Program. Supporting data were collected by UNH personnel and by volunteers from the Goose Pond Lake Association (GPLA) over the 22-month period from December 1998-September 2000.

Hard copy on file in Canaan Town Library.

Ordinance for Large Wind Energy Systems

http://canaannh.org/boards/planning_board/wind-lwes-ordinance.pdf

Drinking Water Protection Ordinance

http://canaannh.org/boards/planning_board/water-ordinance2012.pdf

Canaan Street Lake Watershed Protection Plan

http://canaannh.org/boards/source_water_protection_committee/swpc-watershed-protection-plan-2006.pdf

Appendix B: Results of Town Wide Survey, 2013

(Italics show Planning Board summary of responses. Responses are from 260 out of 2290 adult residents)

TOPIC

QUESTIONS

Background

Resident **258 98%** Seasonal Visitor **_4_ 2%**

Information

Do you own your home?

Homeowner **_249_ 97%**

Renter **_9_ 3%**

How long have you been in Canaan? **21** (yrs ave)
17 (median)

<10 yrs **31%**
>20yrs **55%**

How large is your household?

Age 0 to 4 _____

Age 5 to 17 _____

Age 18 to 64 _____

Age 65 and higher _____

Are you retired?

70 27%

Working at home

18 7%

Working in Canaan

31 12%

Working outside of Canaan **119 46%**

Town

What town government and/or administration services do you believe need to be

Services

cut back, improved or expanded? Please label those you think should be: **C** – cut back;
I – Improved; **E** – Expanded; **O** – OK as is

	<u>Cut back</u>	<u>Improved</u>	<u>Expanded</u>	<u>OK as is</u>
___ Assessor's Office	30 14%	14 6%	2 1%	170 77%
___ Board of Selectmen	15 7%	29 13%	13 6%	166 73%
___ Health Officer	23 10%	17 8%	17 8%	154 68%
___ Conservation Comm.	24 11%	21 9%	38 17%	136 60%
___ Town Clerk's Office	7 3%	11 5%	15 7%	196 85%
___ Elderly Services	6 3%	35 15%	46 20%	134 59%
___ Fire Department	12 5%	16 7%	22 10%	177 77%
___ Building Inspector	24 11%	22 10%	17 8%	151 68%
___ Library	9 4%	20 9%	43 18%	155 66%

___ Planning Board	20 9%	21 10%	22 10%	155 70%
___ Police Department	31 13%	17 7%	26 11%	158 67%
___ Recreation Department	17 7%	27 12%	59 26%	119 52%
___ Schools	37 16%	98 41%	29 12%	62 26%
___ Tax Collector	15 7%	8 3%	5 2%	199 87%
___ Water Department	14 6%	16 7%	9 4%	171 77%
___ Sewer Department	14 6%	20 9%	10 5%	164 74%
___ Transfer Station	17 7%	21 9%	19 8%	166 71%
___ Welfare Department	46 21%	11 5%	10 5%	144 65%
___ Historic District	27 12%	9 4%	20 9%	165 73%
___ Museum	21 9%	19 8%	25 11%	153 68%
___ Highway Department	11 5%	54 23%	26 11%	135 58%
___ Budget Committee	20 9%	13 6%	2 1%	177 82%
___ Cemetery	4 2%	7 3%	4 2%	205 91%
___ Emergency Management	11 5%	15 7%	15 7%	164 76%
___ Ambulance / FAST Squad	7 3%	20 9%	36 16%	160 70%

Does the town put enough resources into maintaining the town buildings?

Yes **67%** No **27%**

Should we coordinate with other municipalities in providing town services listed above,

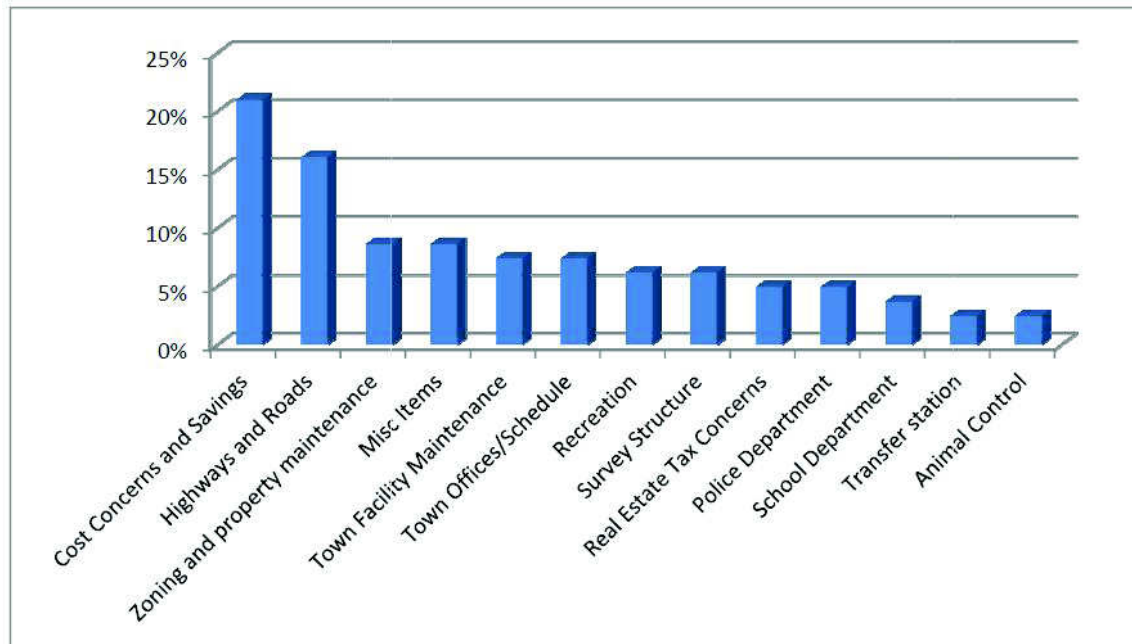
wherever cost effective?

Yes **82%** No **13%**

Comments:

Town Services Section

There were 81 comments filed with the Town Services survey questions. Of these, by far the largest number of comments focused on the costs of town services and savings opportunities (21%), plus the highway department (16%).



Other areas with significant numbers of responses were Zoning/Property Maintenance (focusing on the bad impression made by RT 4 businesses and residences), Town Facility Maintenance, and Town Offices/Schedules.

Costs Concerns and Savings

Seventeen of the comments focused on the importance of managing town services costs and suggestions for reducing costs. Only one comment indicated that such costs should be increased, while eleven said that Canaan should reduce spending wherever possible. The remaining comments focused on suggestions for such reductions, mainly by combining departments and/or supervisory roles and by regionalization of services.

Highways and Roads

All thirteen comments focused on poor condition of town roads, in particular those that are dirt. One comment noted the inability to operate their 2 WD drive during portions of each winter, due to the bad condition of the road and poor town maintenance. Additionally, one fourth of the comments focused on Canaan Street and Goose Pond road as being in very poor condition. Other comments focused on the need to better manage the highway department staff and resources, noting that trucks often re-plow the same bare roads, while neglecting others that need attention.

Zoning and Property Maintenance

Some of the strongest statements focused on the lack of zoning and the adverse impact of what would be non-compliant properties on the appearance of the town. More than half mentioned that RT 4 creates a very poor impression due to business and residential junkyards as people enter the town.

Town Facility Maintenance

Seven percent of the comments focused on the need for better maintenance of town owned facilities, including buildings on Canaan street, the Museum, and the Meeting

House. One comment mentions the need to maintain reserve accounts for such maintenance and another mentioned that Canaan should use local contractors, not out of town vendors.

Town Offices and Schedules

Comments focused on coordinating schedules across various offices to eliminate the need for multiple trips, and the desire to group offices together. One noted that the town office is small and somewhat dingy.

Recreation

Five comments, all indicating the need for more recreation opportunities, perhaps getting together with Enfield.

Survey Structure

Five suggestions for improving the survey structure.

Real Estate Tax Concerns

Four comments, noting the taxes are too high and not getting much for them. To suggested cutting services to reduce taxes, one noted better efficiency.

Police Department

Four comments, three of which note the police force is too large and not providing much value, one of which noted that the Chief should not be an elected position, but rather appointed by the selectmen.

School Department

Comments split between more/bigger and cutting...pretty much matching the recent votes.

Transfer Station

One positive (new flow), one negative (staff behavior)

Animal Control

Both comments requested more/better controls, in particular leash law.

Canaan's Landscape

Identify those special places in Canaan that are important to you?

Recreational/Conservation:

Most overwhelmingly (41 notations) listed Canaan Lake and beach, a few of these included Goose Pond and Clark Pond. The next most mentioned is Williams Field (16) with mention of the playground (5), need for a playground (3) and a need for more children's recreation. 12 people noted the Rail Trail. There were single comments concerning hiking trails, Cardigan Mountain, and ski trails, forest area, and Mascoma Lake.

Churches & Historic Buildings:

The Meeting House was the highest site with 30 mentions; followed with 3 sites all tied at 17, Canaan Street, the churches (notably the Methodist Church) and museum. Nine votes for “all” and 9 for Library. Grange, downtown, RR Station, Cardigan Mountain School all were mentioned.

Attractive Residential Areas:

More than half (49) stated Canaan Street and Historic District. Mentions were made for Goose Pond, Sawyer Hill, and Gristmill Hill. Fourteen people commented negatively on the dumps/junk yards especially entering from the west on Route 4 and on Route 118.

Scenic and Open Spaces:

There were 10 responses for “all”. It was pretty evenly split for Canaan Street and beach, Cardigan Mountain, and farms and fields (between 13 and 17). Also mentioned were the cemetery, Rail Trail, Grafton Turnpike, lakes and views.

Ponds and Streams:

Twelve voted “all”, (38) Canaan Street Lake, (33) Goose Pond, (26) Mascoma & Indian Rivers, (23) Clark Pond. Also mentioned were Mud Pond, Bear Pond, Orange Basin, and Mirror Lake. Respondents stressed keeping these resources clean and litter free.

Other:

A few supported a Recreational Shooting Range. Comments for improvements: restore docks, clean up trash, youth/adult recreation building, downtown area, bike trail, library, La Salette, agriculture, woodlands. Again we received numerous comments about the eyesore of Route 4 coming into Canaan.

Do you support town involvement in preserving any of these?

Recreational and Conservation Areas:	Yes 219 90%	No 5 2%
Churches and Historic Buildings:	Yes 186 77%	No 14 6%
Attractive Residential Areas:	Yes 150 64%	No 24 10%

Scenic and Open Spaces: Yes **205 85%** No **9 4%**

Ponds and Streams: Yes **217 89%** No **6 2%**

Do you support the following as part of Canaan's Landscape?

Wind farms (typically on ridges) Yes **165 67%** No **20 8%**

Solar farms (typically in fields) Yes **200 80%** No **10 4%**

Comment box following wind and solar questions

This box was only available to those who took the online survey, as the hard copy survey didn't ask for comments. Those who responded cautioned that wind and solar should be approached with careful study, as the subject is complex.

Location, cost, taxes, views, and more need to be considered. Some people used this box to discuss many other issues including junk areas, zoning, dog parks, vehicles on lake ice, recreation, and more.

**Business
Economy**

What type of retail shopping would you use in Canaan if it were available?

The survey responders are seriously divided between no businesses and virtually any reasonable business or retail shopping. But, by far the majority of responders favor local stores of all kinds, especially a grocery store. However, to a large majority any kind of store or business one might use regularly seems to be acceptable. Most people want better grocery choice.

What kinds of professional offices should we have in Canaan?

Here again the survey responders are divided between none and virtually any reasonable business or professional offices. But, by far the majority of responders favor any kind of professional office one might use or create jobs. Medical, doctor's office and attorneys most mentioned

What kinds of professional and business use parks should we encourage in Canaan?

Here again the survey responders are divided between none and virtually any reasonable professional or business park. The number requesting no professional and business use parks was up significantly here, but nowhere near the majority. Parks which bring jobs and add to the tax base were mentioned.

What type of businesses, (commercial, retail, manufacturing, etc.) if any, would you like to see **discouraged** in Canaan?

Once again, but with an addition, the survey responders are divided between none and virtually every business. A significant number answered any or all businesses. Most everyone who did not respond none had one or two specific businesses they do not wish to have locally. Businesses and types of businesses mentioned more than once were bars, liquor stores, adult shops, gambling-casinos, polluting, pool halls, noisy, big box, chains, non small, storage, smoke shops, strip joints, malls, chemical plants, gun stores, dirty, junk yards, oil refineries, race tracks, shooting ranges, ATV parks, industrial plants, loud, manufacturing, nuclear plant, paper mills, chemical weapons, trailer parks.

Where should new professional and business parks be located?

145 60% Along Route 4 **11 5%** Along Route 118
28 12% Near Canaan Village
12 5% Spread throughout the town _____ No opinion
 Why?

Are there areas in town that you would like to see protected from business development?

Residential Growth

What is your opinion about the rate of **residential** growth in Canaan?

29 12% Growing too rapidly **59 24%** Not growing fast enough
107 43% Growing at about the right rate **44 18%** No opinion

Where should most of our residential growth be located?

47 20% On large rural lots **53 22%** In rural clusters
54 23% In compact 'downtown' settlements **78 33%** No opinion

Canaan's voters authorized charging an impact fee for the construction of new homes and commercial buildings, but it has never been implemented. Should the cost of the building permit include an impact fee to offset new costs to the town for road maintenance, schools, police and fire protection?

Yes **68%** No **32%**

Should new construction be regulated differently depending on whether it is in town or in more rural areas? Yes **52%** No **48%**

Comments?

Nine are unsure and need more information about impact fees and possible growth. Eight are opposed to additional land use regulations. Three indicated homes are not being built to existing building codes and are unsafe. Six complained about the junky properties near the high school and elsewhere. Seven wish to preserve rural character, forests, and streams. Several people proposed application of the impact fees to only certain types of property, but state law requires degree of uniformity, so this would need close examination. Likewise, different tax rates for different property types were proposed, and this also needs to be examined relative to state law. Strong opinions were expressed both for and against zoning. to reduce the chances of noise or a junk site bringing down neighborhood values. While opponents did not want any regulation to interfere with any future activity they might undertake. There were comments about roads, existing public and private roads. Finally, some said taxes are too high, while others said we need more services.

Open Space & Recreation	Does Canaan need additional recreational facilities? Yes	51%	No	49%
	Does Canaan need a Youth/Community Center? Yes	64%	No	36%
	Do we need to increase adult recreation? Yes	51%	No	49%
	Do we need to increase elderly recreation? Yes	52%	No	48%
	Should conservation lands and waters be more			
	accessible to the general public? Yes	67%	No	33%
	Do we need to increase individual recreation? Yes	45%	No	55%
	Do we need to increase team recreation? Yes	40%	No	60%
	Should tax dollars be spent to develop these? Yes	47%	No	53%
	Comments?			

There were a variety of comments with several requesting that tax dollars not be spent developing or running recreation activities. Fees were suggested if people wanted to be part of a certain team or sport. Intramural leagues were felt by several people to be of interest. There were several comments concerning the use of grants or private monies. The comments included a community garden and a multi-purpose facility to be used for recreation or all ages. There was a request to install docks at Canaan Street Beach and reduce beach use by non-residents. Several people requested more activities for children and teens.

Housing

Which of the following housing types should the Master Plan encourage in Canaan?

Rental Properties	Yes 49%	No 31%	No Opinion 20%
In-Law Apartments	Yes 55%	No 18%	No Opinion 27%
Mobile homes	Yes 20%	No 62%	No Opinion 17%
Condominiums	Yes 43%	No 40%	No Opinion 17%
Developments	Yes 42%	No 41%	No Opinion 17%
Multi-Family residences	Yes 46%	No 34%	No Opinion 19%
Unrestricted Development	Yes 10%	No 80%	No Opinion 10%
Assisted Living	Yes 70%	No 17%	No Opinion 13%

Canaan is an old town with many lovely antique residences. Should the town adopt a Heritage Commission to encourage their preservation? Yes **63%** No **27%**

How can we create or encourage housing for low income or moderate income families?

Don't

A substantial minority commented that Canaan doesn't need any more lower income housing, i.e., poorly maintained properties, mobile homes and trailers. We should be attracting higher income residents to improve the community. Allow the market place to select economically viable alternatives. Lack of zoning already encourages lower income families to live in Canaan.

Reduce Taxes

One of the two most frequent suggestions was to lower property taxes to reduce the cost of living in Canaan.

Develop multi-family homes and rental properties

The other most common suggestion was to encourage cluster development, apartment buildings and condominiums. Build another Indian River Housing project with a cooperative ownership structure where the occupants have a stake in the upkeep. Work with Andrew Winter at Twin Pines Housing Trust in WRJ VT.

Seek Grants, State and Federal Subsidies

HUD programs are recommended. Hanover's Gile Hill moderate income housing is cited. The Town should rent out homes it owns that were seized for tax delinquencies. Create a fund to make loans to help residents buy homes that must be repaid when that house is sold.

Jobs and Transportation

Without increased local jobs or improved transportation for commuting to out-of-town jobs, lower income housing initiatives are doomed to become welfare havens.

Need for Improved Services

The Town's Sewer and Water District must be expanded for lower cost housing. Improve local health care, social services and education.

Rural Areas How should we guide the future of our rural lands? For the purposes of this survey, rural areas include all of except: village areas served by water & sewer, Canaan Street Historic District, pond & lakes frontage already protected by the state, and frontage along route 4. Please select one blank for each row.

	Encourage	Encourage with Limits	Discourage
Agriculture	69%	29%	1%
Forest	74%	19%	5%
Gravel pit or excavations	5%	44%	48%
Outdoor equipment or material storage	9%	47%	41%
Industrial without noise or odor	29%	44%	25%
Office buildings	38%	48%	12%
Warehouse Service	23%	46%	28%
Service depots	17%	50%	29%
Commercial landfills	3%	12%	83%
Outdoor recreation (motorized winter)	24%	52%	22%
Outdoor recreation (not motorized winter)	72%	24%	2%
Outdoor recreation (motorized summer)	23%	46%	29%
Outdoor recreation (not motorized summer)	71%	25%	2%
Campgrounds	50%	42%	7%
Racetracks (auto)	12%	41%	41%
ATV parks	14%	41%	43%
One family dwelling	81%	16%	2%
Two family dwelling	50%	39%	10%
Second dwelling on single lot	18%	38%	39%
High density housing with common open space	25%	40%	33%
Condominiums	25%	39%	34%
Apartments	20%	48%	29%
Mobile Home Parks	8%	29%	61%
Home based business	55%	39%	4%
Land-locked parcels	14%	20%	62%
Woods	88%	9%	2%
Quiet/Silence	76%	18%	3%
Wildlife	89%	10%	0%
Privacy	84%	13%	1%
Scenic views	86%	10%	2%
Sparse population	43%	37%	15%
Unpaved roads	26%	33%	38%
Town acceptance of private roads	24%	41%	32%
Preservation of barns	58%	31%	8%

Road frontage for new lots	33%	53%	10%
Adult bookstores and clubs	6%	11%	78%

Transportation 15 and Roads

How far do you travel to work?	Mean 15.4	Median	
Which way do you travel to work?	In Canaan	7%	Rt 4 West 64%
	Rt 4 East	7%	Rt 118 North 1%
			At home 8%

List the roads in Canaan, if any, which you feel are inadequate to serve existing traffic.

<i>Canaan St.</i>	23	<i>West Farms</i>	4
<i>Goose Pond</i>	23	<i>Talberts Hill</i>	4
<i>Rte 4</i>	22	<i>Stevens</i>	4
<i>Grafton Turnpike</i>	13	<i>Sawyer hill</i>	3
<i>Fernwood Farms</i>	12	<i>Prospect hill</i>	3
<i>Rte 118</i>	11	<i>Back Bay</i>	2
<i>Switch</i>	8	<i>Clark Hill</i>	2
<i>Codfish Hill</i>	8	<i>Choate</i>	2
<i>South Rd</i>	8	<i>Stark</i>	2
<i>Jerusalem</i>	6	<i>Mud Pond</i>	2
<i>Roberts</i>	5	<i>Potato</i>	2
		<i>Others</i>	10

Many complaints on dirt roads pertained to mud season problems. Canaan Street, Route 4, and Route 118 are maintained by the state.

If roads need to be improved, how should we pay for the improvements?

- 15% increase property taxes
- 23% increase registrations
- 34% increase gas tax

Have you used Advance Transit buses? Yes 33% No 67%

What would encourage you to use the bus more?

Over a third of the people said expanded schedule with more trips throughout the day. Also suggested were conflicting requests for more pick-up/drop-off locations and quicker travel times. Expanded routes within Canaan and destination communities would increase ridership. Limited parking at some bus stops is a deterrent. Switch Road bus stop parking is a problem, especially in winter when Old Switch Rd. is not plowed.

Communication: How do you get information about issues going on in Canaan?

Public Postings	30%
Valley News	36%
Mascoma Listserve	2%
Radio	2%_
Town Web Page	8%
Word of mouth	14%
Town emails	6%
Other	

Do you use a cell-phone in Canaan?

Yes 67% No 20%

Would you support building a new cell-phone tower in the area?

Yes 76% No 17%

Do you use Internet from home?

Yes 89% No 10%

Which service do you use?

Dial up	3%
DSL	24%
Cable	57%
Satellite	8%

Other cell phone 4, WiFi/wireless 4, Verizon 3

Have you visited Canaan's new website, www.canaannh.org?

Yes 71% No 29%

What would facilitate communication amongst the town's people?

Several methods for increasing communication in town were proposed as follows: Canaan listserve (10), more town emails (10), local Mascoma area newspaper (8), newsletter or flyers mailed to residents (8), put bulletin board on town green (4), town social events (3), Facebook (3), and forum on town website (2). Several other ideas were proposed which deserve further consideration, such as posting draft selectmen's minutes promptly after the meeting, police/fire open houses, and holding quarterly town administrator public meetings for interaction.

Future What do you think are the three (3) most serious issues facing Canaan in the next 5-25 years?

Concerns *The answers run the gamut from preservation of rural life to the condition of “junk yards” and “appliance cemeteries”. Quite a few people answered that the condition of the high school and education were the most serious issues. An aging population, property taxes, roads and growth were quite frequent answers also. These answers seem to sum it up – “attracting good and decent people to live and make their home in Canaan” and “growth that is harmonious with the environment”.*

What other things should the Planning Board consider in preparing our new Master Plan?

A number of people expressed concerns in this area and others about the “look” of the town, especially areas that are run down and/or full of junky materials. Additionally, people struggle with remaining a nice rural community while still attracting younger families and businesses to bring in revenues. There were a number of ideas about generating income for the town. Topics discussed included roads, safety, noise, schools, regulations, zoning, water, sewer, elderly, and the economy. As always, the community feels taxes are too high, and unaffordable, however, there is still a desire for better services. One person summed up nicely:

“Consider the type of people you want to attract to Canaan. What kinds of people do want to move into the area and make their home? How can we make the area attractive to young couples who want to start a family and send their kids through our school system? How do we preserve the integrity of our small, rural town and still move into the future?”

Do you believe that the Planning Board should develop and propose a zoning ordinance for Canaan, which would be voted on at a Canaan Town Meeting?

Yes 64% No 31%

Appendix C: Build-out Analysis

INTRODUCTION

The Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC) performed this build-out analysis at the request of the Canaan Planning Board in conjunction with the Board's update of the town master plan. The build-out analysis is a tool for assessing the compatibility between the community's vision for the future and the current regulatory environment. The term "build-out" is a planning reference to a hypothetical calculation of the maximum development allowed under existing regulations. The purpose of the build-out is to answer questions such as:

- How many new lots can be developed?
- How would this potential growth be distributed throughout town?
- How many dwelling units would these new lots represent?
- How much would the population increase?

The results of a build-out analysis often facilitate further discussion within the context of planning for the community's future, including:

- How will the projected growth affect the community?
- Are there areas projected for development which the community would prefer not to develop or to develop at a lower density?
- Are there areas that the community would prefer to develop at higher densities to concentrate growth where facilities and services will be more efficient and cost effective to provide?
- What additional facilities and services will be required to serve the needs of future residents?
- What steps should the community be initiating in the near future to accommodate future growth?

A build-out analysis is a model for calculating development potential. This build-out analysis

estimates potential residential development in Canaan under current land use controls. It is predicated on certain assumptions which are outlined in this report. A different set of assumptions would result in a different projected population. A build-out analysis, unless performed lot-by-lot, also relies on many generalizations. The underlying assumption is that factors which may bias the numbers in one direction or the other balance out; and that presenting the numbers aggregated for larger areas of the community also balances out irregularities associated with data collected on smaller geographic areas.

Timing is not relevant to the build-out analysis as it is assumed that time is condensed to allow all possible development to occur today. The build-out analysis holds at today's conditions factors such as demographics, technology, municipal infrastructure and other variables that may affect development patterns.

METHODOLOGY AND ASSUMPTIONS

The UVLSRPC used its geographic information system (GIS) and data layers provided through GRANIT, the state's GIS system housed at the UNH Complex Systems Research Center, as well as those developed by UVLSRPC and others, to perform much of the analysis. Each of the GIS data layers and other data sources, as well as the assumptions associated with this analysis, is outlined below. The UVLSRPC utilized PC ARC/INFO 3.5.2 and Arcview 3.2 software to perform the GIS analyses. Spreadsheet analysis was performed using Quattro Pro v.11.

The town was analyzed in fifteen study areas as shown on the attached map.

Future residential development was calculated for each of these fifteen sections of town and presented accordingly. The results are shown on the attached map and a more detailed large colored map available for viewing at the town office.

Development Density

This build-out analysis projects the future population of Canaan in the absence of a local zoning ordinance. To incorporate development limitations associated with the land into the analysis, including wet and steep areas, soil-based lot sizes utilized by NH Department of Environmental Services for reviewing proposed residential subdivisions were used for the build-out analysis where neither public water or sewer is available. In study area #12 where

public water and sewer are available, the density was estimated at two dwelling units per acre at the direction of the Planning Board.

Surface Water

The area occupied by ponds and lakes was excluded from the developable land area. Surface water information was based on the USDA NRCS Soil Survey for Grafton County.

Land Protected From Future Development

Publicly-owned conservation land and privately-owned land protected from development with conservation easements or other development restrictions was deducted from the land area available for future development. The GRANIT conservation land layer developed in 1995 by the Society for the Protection of NH Forests, updated in 2002 by UVLSRPC, was updated and used to identify conservation lands.

Existing Land Use

Existing land use was identified and digitized by UVLSRPC using 1998 digital orthoquads provided through the NH Department of Transportation. The results were then reviewed by local officials. Lands identified as currently containing the following land uses were excluded from land considered developable:

- Residential
- Commercial
- Institutional
- Industrial
- Outdoor recreation

Existing Road Rights-of-way

Road centerlines were based on 1:24000 digital line graph data provided through GRANIT. Centerlines were buffered twenty-five feet on either side to approximate general right-of-way areas. These areas were then excluded from developable land calculations.

Future Roads

The area that would be taken up with future road rights-of-way associated with potential growth was deducted from the land area available to form new lots. The percentage of land needed for roads and other utilities increases with the density of development. A deduction of 18% was used for this analysis based on previous sampling by UVLSRPC of densities in the Region similar to that which would be found in Canaan at build-out.

Residential vs. Nonresidential Land Area

The proportion of developed land area currently estimated to be developed for residential uses is listed below for each study area. These percentages are based on current ratios derived from the GIS land use mapping. These numbers were applied to future development to estimate the proportion of new development that would be residential.

Study Area	% of Future Development Assumed to be Residential
1	100
2	100
3	100
4	100
5	100
6	81
7	90
8	100
9	80
10	100
11	86
12	76
13	20
14	100
15	100

RESULTS

The 2000 US Census counted 1,588 dwelling units in Canaan. It is estimated that 12,057 additional dwelling units could be built in Canaan under current conditions for a total of 13,645. The distribution of potential residential development across town is listed below and shown on the attached map. As shown, the growth potential of the rural areas of town vastly exceeds that of the village and surrounding area. Rather than concentrating development where facilities and services are available and more cost effective to provide and maintain, in the absence of a zoning ordinance, development will eventually spread fairly evenly throughout the town.

Study Area	Additional Residential Lots Projected
1	998
2	1644
3	1825
4	841
5	1111
6	1187
7	1085
8	710
9	451
10	188
11	79
12	31
13	10
14	1867
15	30

The next step in calculating a potential future year-round population for Canaan under current zoning is to estimate the number of these residential units that would be occupied year-round. For the purposes of this analysis, the vacancy rate (4.4%) and percentage of housing units occupied seasonally (15.1%) were assumed to remain constant. These assumptions result in an estimated 10,984 housing units occupied year-round at build-out.

Occupancy Status	Housing Units Counted by 2000 U.S. Census	Total Number of Housing Units Projected at Build-out
Year-round occupied	1279	10,984
Vacant	70	600
For seasonal use	239	2060
Total housing units	1588	13,645*

*Does not add due to rounding.

Population

The U.S. Census reported a population of 3,319 for Canaan in 2000. Assuming an average household size of 2.59 persons per household as reported by the 2000 U.S. Census, the population of Canaan would increase by a factor of more than eight to approximately 28,449 at build-out. For comparison, the Region's largest two communities in 2000 were Claremont with 13,151 residents and Lebanon with 12,568. Grafton County had a population of 81,743 in 2000, Concord had 40,687 and Laconia 16,411.

Seasonal dwellings represent an additional segment of the community requiring consideration for services as well. However, the number of seasonal residents or users of seasonal dwellings is difficult to estimate. Household size, length and frequency of stay, turnover of users, all affect the nature of the community's needs relative to these dwelling units.

The U.S. Census counted 761 school-age children (ages 5 through 19) in Canaan in 2000. Assuming the age structure of the population remains the same at build-out, the potential school-age population for Canaan is 6,515. The U.S. Census counted 322 Canaan residents age 65 or over in 2000. Again assuming the percentage of the total population comprised of older residents remains the same at build-out, the potential population of older adults in Canaan is 2,760. Both of these segments of the population require special considerations when planning for facilities and services needed in the future.

Traffic Generation

Traffic generation estimates are based on factors developed from nation-wide sampling and provided by the Institute of Transportation Engineers (Trip Generation, 6 Edition, ITE, Washington, D.C., 1997). The figure for single-family residences (9.57 trips per day) was applied to all year-round housing in Canaan as multi-family housing in rural communities without public transit is also autodependent. This

results in as estimated 12240 trips per day associated with today's year-round residents increasing to about 105117 trips per day at build-out.

Some considerations relative to the magnitude of this potential traffic increase are:

- Without zoning, Canaan's future is one in which growth is spread out all over town at relatively high densities, meaning the substantially increased traffic volume associated with this growth has the potential to also be widely distributed, posing a significant maintenance challenge for future local officials.
- The 105,117 figure reflects only locally-generated traffic. Non-local traffic will continue to increase as the regional population grows.
- Traffic generated by commercial and industrial growth can also be expected to grow.

CONCLUSION

This analysis of the potential residential growth associated with undeveloped land in Canaan indicates that under current conditions Canaan has the potential to grow to a year-round population of at least 28,449. This represents more than an eight-fold increase over the 3319 residents counted in the 2000 U.S. Census. An examination of developed land in Canaan would likely reveal some in-fill potential which would increase this number further.

It should be kept in mind that a build-out analysis is a model based on a set of assumptions - - a different "crystal ball" will yield different results. Whether the results predict the future with an accuracy of + 0.1 % or $\pm 10\%$, they provide a basis for assisting the Planning Board as it continues to strive for a balance among growth, the community's vision for its future, and the municipality's ability to provide facilities and services.

The analysis lays a foundation for easily testing alternative regulatory schemes as part of the master plan process, such as a differential between the minimum lot size in and around the village area and the rural areas, to evaluate effects on total population and the distribution of population. Used in this way, a build-out analysis can serve not only as a catalyst for change if the impacts associated with the anticipated growth appear inconsistent with the community's desires and capacities, but also as a tool for examining options for affecting a different future.

