

Town of New Haven

Town Plan

Adopted

March 7, 2017

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Energy Plan

24 V.S.A. §4382(a)(9) and 24 V.S.A. § 4348a(a)(3)

Vermont state energy law and policy, particularly regarding non-utility power generation, changed significantly in the ten years prior to the writing of this 2017 New Haven Town plan. A series of legislative enactments, followed by regulatory changes at the Public Service Board, created a rapidly shifting legal landscape for New Haven and other towns attempting to respond to non-utility generator and merchant facilities development.

These changes in law follow in the wake of frenzied advances in energy technology: the industry of solar, wind, methane and biomass generation as well as merchant transmission facilities for fuels and electricity has emerged at a pace and force that was unanticipated as recently as a decade ago. Rapid change gives rise to new issues and conflicts, including how to fit distributed

generation into a power grid that was not designed for it, and how to secure our energy future without degrading important elements of Vermont culture and environment like wetlands, forest, wildlife habitat, prime agricultural soils, and the visual and cultural landscape valued by residents and critical to the tourist economy.

Utility projects like electric generation and transmission facilities and gas pipelines are regulated by the state of Vermont pursuant to 30 VSA §248. The state pre-emption statute indicates that towns cannot apply municipal land use regulation to §248 utility projects. However, the nature of §248 projects, and the mandates and authorizations of state statutes, have been changing so swiftly that many significant legal questions regarding the role of municipalities in review of these projects have yet to be

ruled on by the Vermont Supreme Court. Statutes and regulations have been changing annually, but interpretation of how those statutes and regulations will work has not yet caught up.

New Haven is the site of a hyper-abundance of energy projects and utility infrastructure, described in more detail below. Town residents have repeatedly expressed their fervent desire to minimize or preclude the negative impact of both utility infrastructure and non-utility generation facilities (particularly of a commercial scale -- the Town consistently supports its residents' rights to install alternative energy such as solar or wind to offset their own residential or home and farm business energy needs) on the Town's scenic landscape, agricultural soils and economy. In response, the Town has actively engaged in specific project review proceedings at the Public Service Board and at the Vermont Supreme Court. The Town has also participated in hearings, workshops

and comment sessions on utility regulations and statutes at the Public Service Board and Vermont Legislature.

The Town's efforts have had a positive, substantive impact both in terms of mitigating adverse effects of projects within the Town, and in creating regulatory processes that are more appropriate and accessible to municipalities and project neighbors. No other town in the state has taken as active a role in the ongoing public dialogue about energy generation siting and the ability of municipalities and project neighbors to participate meaningfully in Public Service Board processes.

Legislation adopted over the past several years authorize municipalities to adopt solar development screening bylaws, and to address §248 project issues in Town Plans in such a way as to warrant greater consideration and deference by the Public Service Board.

Act 56, adopted in June 2015:

- mandated statutory minimum setbacks for solar electric generation facilities, as an amendment to 30 VSA §248(s). The statute states that the Public Service Board *may* require setbacks greater than those mandated.
- authorized municipalities to adopt solar screening requirements as a 'municipal bylaw... under 24 VSA Section 4414(15)' or by a 'municipal ordinance...under 24 VSA Section 2291(28)'.
- added 30 V.S.A. §248(a)(4)(F) to read: (F) The legislative body and the planning commission for the municipality in which a facility is located shall have the right to appear as a party in any proceedings held under this subsection.

Act 174, adopted in June 2016:

- authorized municipalities to submit their plans to the Regional Planning Commission or, for a limited time, to the Commissioner of the Department of Public Service, for a determination of energy compliance.
- expanded the right of municipal legislative bodies and planning commissions to participate in the Public Service Board proceedings for projects in adjoining towns if the distance of the facility's nearest component to the boundary of that adjacent municipality is 500 feet or 10 times the height of the facility's tallest component, whichever is greater.
- required developers of projects greater than 15kW to record a notice of the certificate or amended certificate, on a form prescribed by the Board, in the land records of each municipality in which a facility subject to the certificate is located and shall submit proof of this recording to the Board.
- required ground-mounted solar electric generation facilities to comply with the screening requirements of a municipal bylaw adopted under 24 V.S.A. § 4414(15) or a municipal ordinance adopted under 24 V.S.A. § 2291(28), and the recommendation of a municipality applying such a bylaw or ordinance, unless the Board finds that requiring such compliance would prohibit or have the effect of prohibiting the installation of such a facility or have the effect of interfering with the facility's intended functional use.
- mandated that the Public Service Board **shall give substantial deference to the land conservation measures and specific policies contained in a duly adopted regional and municipal plan that has received an affirmative determination of energy compliance under 24 V.S.A. § 4352. "Substantial deference" means that a land conservation measure or specific policy shall be applied in accordance with its terms unless there is a clear and convincing demonstration that other factors affecting the general good of the State outweigh the application of the measure or policy.**

Additionally, the state Municipal Development Plan statute, 24 VSA §4382, requires that Town Plans contain the following energy element:

(9) An energy plan, including an analysis of energy resources, needs, scarcities, costs and problems within the municipality, a statement of policy on the conservation of energy, including programs, such as thermal integrity standards for buildings, to implement that policy, a statement of policy on the development of renewable energy resources, a statement of policy on patterns and densities of land use likely to result in conservation of energy.

This Energy Plan section of the New Haven Town Plan comprises the energy plan required by 24 VSA §4382(a)(9), the energy element required by 24 VSA §4348a(a)(3), and the Town's Enhanced Energy Planning under 24 VSA §4352 (b) and (c). It also establishes the parameters of the Solar and Commercial Development Screening Bylaw to be adopted within the Town's zoning bylaws.

Upon adoption of this Town Plan, the Town shall seek to have it certified by the Regional Planning Commission or the Commissioner of Public Service for an affirmative determination of energy compliance.

At the time of writing and adoption of this Town Plan, receiving a determination of energy compliance requires that the Town Plan contain and be deemed consistent with the following statutory provisions:

24 V.S.A. § 4348a(a)(3): An energy element, which may include an analysis of energy resources, needs, scarcities, costs, and problems within the region, across all energy sectors, including electric, thermal, and transportation; a statement of policy on the conservation and efficient use of energy and the development and siting of renewable energy resources, and; a statement of policy on patterns and densities of land use and control devices likely to result in conservation of energy; and an identification of potential areas for the development and siting of renewable energy resources and areas that are unsuitable for siting those resources or particular categories or sizes of those resources.

24 V.S.A. §4352(c) Enhanced energy planning; requirements. To obtain an affirmative determination of energy compliance under this section, a plan must:

...

(2) in the case of a municipal plan, include an energy element that has the same components as described in subdivision 4348a(a)(3) of this title for a regional plan and be confirmed under section 4350 of this title;

(3) be consistent with the following, with consistency determined in the manner described under subdivision 4302(f)(1) of this title:

(A) Vermont's greenhouse gas reduction goals under 10 V.S.A. §578(a);

(B) Vermont’s 25 by 25 goal for renewable energy under 10 V.S.A. §580;

(C) Vermont’s building efficiency goals under 10 V.S.A. § 581;

(D) State energy policy under 30 V.S.A. § 202a and the recommendations for regional and municipal energy planning pertaining to the efficient use of energy and the siting and development of renewable energy resources contained in the State energy plans adopted pursuant to 30 V.S.A. §§ 202 and 202b (State energy plans); and

(E) the distributed renewable generation and energy transformation categories of resources to meet the requirements of the Renewable Energy Standard under 30 V.S.A. §§ 8004 and 8005; and

(4) meet the standards for issuing a determination of energy compliance included in the State energy plans.

Energy Infrastructure, Facilities and Service

Historically most of New Haven’s energy needs were met locally. Forests provided fuel for heat; the New Haven River and Otter Creek were dammed to power mills and later electrical generation facilities; humans, horses and oxen provided transportation and moved farm and logging equipment. Kerosene and whale oil lamps relied on imported fuels, while the railroad brought mechanized transportation. The advent of electric light and the internal combustion engine around the turn of the 20th century transformed the use of energy in New Haven, and throughout the state, country and world.

Fossil fuel production and consumption is subject to global market forces and disruptions; it presently produces cost-effective fuel for transportation, heat, and industry, but also produces negative environmental impacts. Petroleum prices are down to modest levels at the time of writing this Town Plan, but have fluctuated widely over the last decade and may be expected to do so again in the foreseeable future. As a result, there is heightened interest nationally and statewide in the development of solar, wind and other low-emission, renewable energy resources and more fuel efficient and alternative fuel vehicles. New Haven has met and exceeded its fair share of contribution to statewide renewable energy goals and is host to a diverse array of renewable energy resources.

New Haven can continue to contribute to a positive energy outlook that supports our local economy, cultural, scenic, historic and environmental resources, by taking steps to:

- ◆ Promote energy conservation and increased energy efficiency, e.g., through building energy audits, weatherization and equipment replacement;
- ◆ Encourage or require lot layouts and building siting, design and construction techniques that maximize access to onsite renewable energy resources and incorporate emerging technologies;
- ◆ Seeking to ensure that our local electric distribution lines maintain sufficient available capacity for distributed generation that serves local residents with on-site electric use, or that supports the local agricultural and forestry economy with biomass and biomethane generation; and
- ◆ Encourage energy-conscious land development patterns -- particularly clustered village centers and a vibrant local economy including home occupations, home businesses, and small local businesses that serve the community while minimizing commuting -- and provide safe and

convenient alternatives to automobile travel for local trips.

New Haven is located within the electric distribution service territory of Green Mountain Power, a utility company owned by Gaz Metro of Canada. Green Mountain Power owns and maintains the distribution lines within the Town, and also owns the hydroelectric facility at Belden Falls in New Haven. A 40-year license for this certified low-impact hydro plant was issued by FERC in 2014 allowing GMP to double this facility's output.

Regional power transmission lines and substations are located within the Town, owned and operated by VELCO.

As of the writing of this Town Plan, a merchant power transmission project is proposed by Vermont Green Line Devco. This high voltage DC line would transmit power from upstate New York and Canada via a cable under Lake Champlain to the VELCO substation in New Haven. A large converter station proposed for construction would convert the DC power to AC for insertion into the VELCO regional distribution grid. This project is for New England regional transmission only; no power from the project will serve local distribution lines or customers. The Town has negotiated an agreement with the project aimed at mitigating potential impacts relative to noise, aesthetics, property values and economic benefits.

As of the writing of this Town Plan, Vermont Gas -- another subsidiary of Gaz

Metro -- is in the process of constructing a natural gas pipeline that would transmit gas through the Town, and also develop local distribution lines that would serve a small portion of New Haven near the Town Offices, School and Village Center. The Town has been an active participant in the Public Service Board review process and has negotiated a Memorandum of Agreement with VGS to reduce adverse impacts of the project and ensure that a portion of the Town will have access to natural gas distribution service.

Within New Haven are a rapidly escalating number of non-utility distributed electrical generation facilities, all of which have been constructed within the last few years. These vary in size from the 2.2MW Cross Pollination solar facility on Route 7 approved by the Public Service Board in 2011, to several ground-mounted group net metering arrays, to many dozens of residential rooftop solar panels generating a few kilowatts of power used primarily on site. The list of

Background: New Haven's Experience with Utility and Non-Utility Energy Projects

In 2009, VELCO completed a major upgrade to its transmission infrastructure within the Town, including the addition of a 345 kV line and construction of a much larger substation off Route 17 west of the Village Center. Green Mountain Power has installed lines connecting to the VELCO

applications and project proposals is too fluid to describe accurately, but in the several years preceding the writing of this 2017 Town Plan, has included at least one additional 2.2MW facility occupying over 20 acres of farmland, and well over a dozen ground-mounted group net metering project proposals, several located on prime agricultural soils or on wetlands. Several of these have been constructed; others are undergoing PSB review or Vermont Supreme Court appeal.

As a result of this profusion of distributed electric generation within the Town, Green Mountain Power has designated most of the distribution circuits serving the Town as "Poor" (red) on their online Solar Map, indicating that these circuits are at or exceeding capacity. As of the writing of this Town Plan, only a small portion of the easterly side of New Haven has available capacity on its distribution lines, according to GMP.

infrastructure.

The VELCO upgrade project was strongly opposed by many New Haven residents. The Town participated in the Public Service Board process, opposing the VELCO upgrade and vigorously arguing that the lines within the Town should be buried to diminish the significant negative aesthetic impact of the project. The PSB did not rule in the Town's favor, and the massive power line today creates

a garish contrast with New Haven's stunning visual landscape, particularly from certain views on Route 7 and as they cross Main Street (Route 17) just west of the Village Center. It is likely that further expansion within the VELCO transmission corridor from New Haven to Williston will be proposed at a future time.

In 2011, the PSB issued its approval for the construction of the 2.2MW Cross Pollination facility on Route 7 in New Haven. This was one of the first solar electric generation facilities constructed in the State. The Town accepted its role as host to this -- at that time -- unique and innovative energy development, but advocated strongly for substantive aesthetic mitigation to minimize the visual impact on project neighbors and travelers on Route 7. The Town worked closely with Addison County Regional Planning to improve on the project's proposed siting and screening designs. While the project was constructed employing some of these mitigation measures, such as siting the project further from the roadway than originally planned, and housing the inverters in small structures that appear to be barns or sugar shacks, as of this writing the landscaping screening has not been completely installed. The plantings that have been done have failed to thrive and are not currently serving the intended function.

Within a few years after the Cross Pollination project construction, Vermont adopted economic and regulatory incentives for solar development,

particularly net-metered projects, and New Haven was inundated with notices for proposed solar development. Unlike the long and engaging review process for Cross Pollination, the legislature had put solar development on a fast track. While many of these notices were for roof-top residential solar projects that did not cause public concern, the Town also received a rapidly increasing number of applications for ground mounted net-metered solar arrays covering more than an acre of land, and then for a Standard Offer project covering over 20 acres of farmland. The Town through the Planning Commission, and then the Selectboard, scrambled to find effective ways to participate in the PSB process for the new facilities.

Most of the ground-mounted net metering projects in Town serve customers outside of New Haven; most sell their renewable energy credits, and thus can not legally be deemed renewable energy.

While Townspeople recognize the necessity of utility infrastructure, it is evident that the Town is bearing a disproportionate share of the adverse impacts of utility development (overloaded distribution lines and substation infrastructure, degradation of nearby property values through inserting industrial facilities in residential zones, diminishment of cultural, environment and scenic resources including aesthetics and loss of open lands and farmlands, impact on wildlife habitat and critical agricultural economy, and potential impacts on the future of land use planning

and development patterns) designed primarily to serve development outside the Town, and in many cases outside the county or State. It is the Town's objective to ensure that all reasonable measures are taken to mitigate any further adverse impacts on the Town from utility and non-utility energy facilities, including

generation, transmission and distribution infrastructure, particularly with respect to protecting the high quality of the Town's scenic character.

24 V.S.A. § 4348a(a)(3): Analysis Of Energy Resources, Needs, Scarcities, Costs, And Problems Within The Region, Across All Energy Sectors, Including Electric, Thermal, And Transportation

A. Electric

New Haven is rich in electric energy resources. Hydropower from the Belden Dam, and power from the Cross Pollination solar photovoltaic plant, together with numerous rooftop and ground mounted solar arrays, already produce far more power within the Town than is consumed within the Town.

New Haven's electricity needs, according to the Community Energy Dashboard, is 5,277,600kWh per year: 7200kWh year average Vermont household X 733 household units in New Haven (assuming 100% occupancy).

The Belden Falls hydropower facility produces 9,600,000kWh/year, and is slated for a substantial production expansion. This one facility alone produces nearly twice New Haven's electric consumption.

Four properties in New Haven generate power from wind, producing 36,724kWh per year.

New Haven is ranked second in the state for the quantity of ground-mounted solar electric generation facilities. There are 33 ground-mounted solar sites in New Haven, producing 5,620,134kWh/year -- also in excess of New Haven's electrical needs.

As of the writing of this Town Plan, 35 New Haven residents also have roof-mounted solar electric generation equipment, producing 301,714kWh of power per year.

TOWN ELECTRIC NEEDS: 5,277,600kWh

TOWN ELECTRIC GENERATION: 15,558,572kWh

The issue of scarcity and need for New Haven in regards to electricity is inverted: The challenge faced by the Town is that distributed generation has saturated local distribution lines. The primary need of the Town in terms of electricity is to strive to ensure that electric

power remains safe and of high quality for Town residents and businesses, without experiencing line-flicker, over-voltages or power outages due to overloaded equipment. An additional need of the Town is to strive to ensure that sufficient capacity remains on local distribution lines to continue to allow Town residents and businesses to install generation capacity that will strictly be used on-site, as well as generation capacity of a type that supports the local agricultural economy such as methane digester facilities.

Safeguarding the ability of local residents to install electric generation for on-site use will help reduce electric bill costs. The Town will also continue to encourage weatherization and other cost-savings measures by distributing information about available programs to Town residents and collaborating, when appropriate, with our utility or local nonprofit organizations in other steps to promote energy conservation.

Further electric bill savings will be possible as GMP completes its plan to replace existing electric meters with digital wireless “smart meters” through its smart grid program, GMPCconnects. When GMPCconnects is up and running it will use fiber optic cable and digital technology to relay information back and forth between individual customers, Green Mountain Power, and electric grid components – including information about equipment performance, electric demand and use.

B. Thermal

Vermont has no native petroleum resources, and relies on external sources for transportation and most home-heating fuel supplies. Several local fuel oil dealers and propane dealers serve the New Haven area.

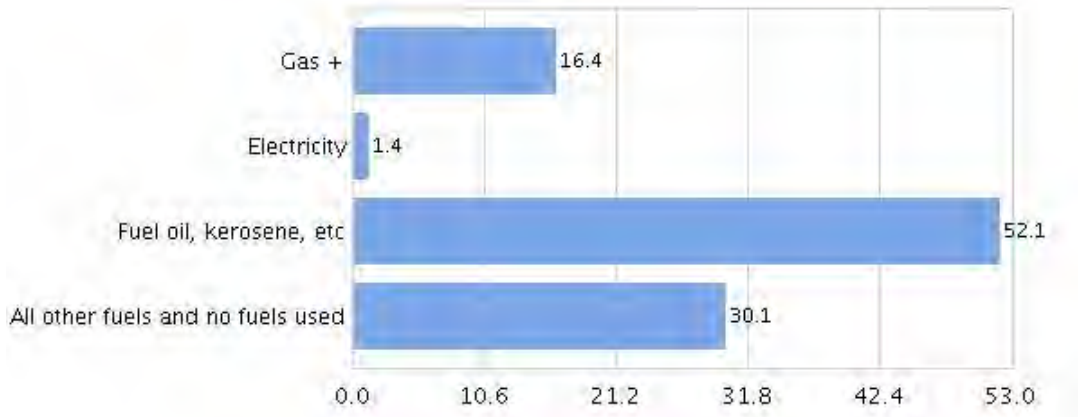
The Vermont Gas pipeline under construction is slated to provide the option of natural gas service to a portion of the Town.

In addition to oil and gas, New Haven residents rely on a variety of heating sources, including wood pellets, wood stoves, exterior wood boilers and furnaces, passive solar or underground construction, and geothermal. The New Haven Town Offices are providing leadership to the community by utilizing geothermal heat.

Statewide, far more homes heat with gas than they do in the New Haven area -- 31% to New Haven's 16.4%. Assuming the Vermont Gas pipeline completes construction and installs the anticipated distribution line in New Haven's Village Center area. New Haven may move closer to the state average. More New Haven area residents heat with fuel oil than the state average -- 52.1% to the statewide 45.6%. However, over 30% of New Haven residents heat with other fuels -- primarily wood and wood pellets as well as heat pumps and geothermal, compared to the statewide average of 18.7%. This indicates that within the thermal sector, New Haven has

exceeded the 25X25 program goal to have 25% of the State's energy use come from locally-produced farm and forest resources.

Figure 18. House heating fuel 2010-2014



+this category includes utility, bottled, tank, or LP gas

As with electricity, New Haven residents and businesses do not tend to experience scarcity of heating resources, though cost can create obstacles for some residents. Weatherization and fuel assistance programs help seniors and low-income residents in New Haven to meet their heating needs.

Efficiency Vermont. Created by the PSB in 1999, Efficiency Vermont is the first statewide energy efficiency utility in the nation. Energy conservation programs are financed by the state's electric utilities through an energy efficiency charge that is passed on to ratepayers. Current programs available to New Haven residents and businesses include:

- ◆ Efficient Products—energy efficient product information and discount coupons.
- ◆ Vermont Energy Star ® Homes Program—technical assistance and rebates to homebuilders and buyers who build energy efficient homes.
- ◆ Commercial Energy Opportunities—technical and financial assistance to commercial and industrial businesses to improve the efficiency of existing and new facilities.
- ◆ Dairy Farm Program—technical assistance, financial incentives and low-interest financing for energy efficient farm equipment.

- ◆ Residential Energy Efficiency Program (REEP)—technical and financial assistance to developers, owners and managers of low income multi-family housing to reduce energy costs.
- ◆ Income-Eligible Services—technical and financial assistance to low-income Vermonters who are participating in the state’s weatherization program to make additional electricity-saving improvements.
- ◆ Emerging Market Initiatives Program—identifies, evaluates and tests innovative energy efficiency technologies and practices to promote their use.

Energy Assistance Programs. Rising energy costs are a particular burden for individuals, households and homeowners with limited or fixed incomes. A number of energy assistance programs are available to income-eligible households; most are administered through the Champlain Valley Office of Economic Opportunity (CVOEO) in partnership with state and federal agencies and area utilities. These include, but may not be limited to:

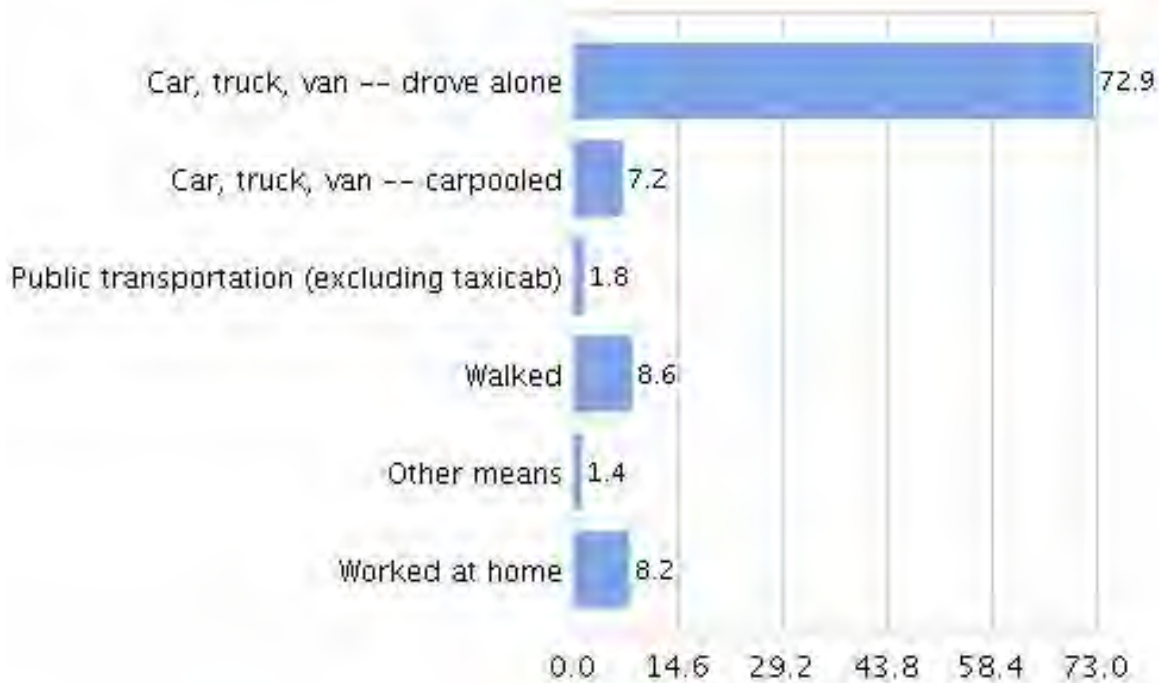
- ◆ Fuel and utility assistance programs—to help pay for seasonal and emergency heating fuel supplies and electrical service. Heating programs rely heavily on federal Low Income Home Energy Assistance Program (LIHEAP) appropriations. Emergency funds are also available through state-funded general assistance programs.
- ◆ WARMTH program—a statewide program that raises emergency funds through individual donations to assist households through direct payments to fuel suppliers and electric utilities.
- ◆ Weatherization assistance programs—available to owners or renters (with landlord participation) including free energy audits, free lighting and appliance upgrades, and renovation services. These programs are funded through federal weatherization programs, the state’s weatherization trust fund, and utility assistance programs. Federal funding for both fuel assistance programs and the community action agencies that administer these programs is at risk under current federal budget proposals. State and local government may be called on in the very near future to fill funding gaps, or to find other innovative ways to address the energy needs of local households.

C. Transportation

The US Bureau of Transportation Statistics reports that the number of registered vehicles in Vermont rose by 6% while the total miles driven by Vermonters increased 16.6% from 1998 to 2007. Light trucks (pick-ups, vans and sport utility vehicles), with lower fuel efficiency than most automobiles, now comprise a larger percentage of vehicles on the road. This suggests that our aggregate fuel efficiency is decreasing, leading to increased transport fuel consumption and fuel emissions. Travel between home and work accounts for a significant portion of local transportation energy consumption—a characteristic of most rural communities in the United States.

Commuting to Work. An estimated 73% of 05472 workers drove to work alone in 2010-2014, and 7% carpooled. The average commute time was 25 minutes. *These figures for the New Haven area are close to the state average, though New Haven can strive to improve its carpooling: Across Vermont, 75% of workers drive to work alone, 10% carpool, and the average commute is 22 minutes. Slightly more New Haven residents take public transportation than the state average: 1.8% to 1.2%.*

Figure 19. Percent of Workers 16 and over Commuting by Mode 2010-2014



Limited transportation alternatives exist that would allow New Haven residents to become less dependent on motor vehicles to get around. Since most of the Town’s energy use is related to transportation fuel consumption, every effort should be made locally to promote

ride sharing, alternative modes of transportation, and less auto-oriented patterns of development.

The primary strategy of the Town of New Haven in regard to transportation energy savings is that of economic development encouraging farm, home occupation, and home businesses, as well as small locally-sourced and locally-serving business, thus minimizing commuting trips as well as trips for services and goods outside of the Town. The ACTR bus loop between New Haven and its three surrounding larger towns, Bristol, Vergennes and Middlebury, ensure that shopping, medical care, and services not available in the Town are available via a public transportation ride a short distance to a nearby community.

The Town will explore the potential for incorporating bike lanes in future road upgrades and participation in the Safe Routes to Schools program.

The Town has developed and maintains a park-and-ride facility centrally located at the Town Offices, adjacent to the community school and library. Efforts to bolster a local rideshare and volunteer driver program could help provide rides and facilitate carpooling for destinations within and beyond the Town. Go Vermont, administered through the Vermont Agency of Transportation, provides state and local information on car-pooling, ride sharing, van-pooling, and special public transportation needs. Elderly Services provides bus transportation for elders and persons with special needs including rides to medical appointments and their vibrant day facility in Middlebury.

24 V.S.A. § 4348a(A)(3): Statement Of Policy On The Conservation And Efficient Use Of Energy And The Development And Siting Of Renewable Energy Resources

It is the policy of the Town of New Haven to support conservation and efficient use of energy across energy sectors including transportation, heat and electricity. The Town has set a leadership example in constructing its Town Offices and library adjacent to the school and near the Village Center, helping to create a walkable village and minimizing car trips; and further by siting and maintaining a park-n-ride at the Town Offices. The Town Offices and library use geothermal heating and high-efficiency lighting, among other efficient energy use techniques. The Town encourages conservation and efficient use of energy in the Town through information sharing regarding weatherization and other programs available to residents, and will expand this role through support of public transportation, ride sharing for commuters, and energy-aware land development review.

It is the policy of the Town of New Haven to acknowledge State statutory and Comprehensive Energy Plan goals regarding the development and siting of renewable energy resources. Additional electrical generation development in the Town is significantly constrained by utility infrastructure limitations and environmental factors, and the Town has already far exceeded distributed electric generation goals. Accordingly, this Town Plan emphasizes conservation across energy sectors, and anticipates that any future electric resource development will offset on-site usage by residents and local businesses within the Town of New Haven, while contributing positively to the quality of life, natural, historic and cultural resources, scenic views and economy of the Town, including geothermal, roof-mounted solar photovoltaic, passive solar construction, wood heat, and manure methane digesters.

24 V.S.A. § 4348a(A)(3): Statement Of Policy On Patterns And Densities Of Land Use And Control Devices Likely To Result In Conservation Of Energy

It is the policy of the Town of New Haven to support patterns and densities of land use and control devices likely to result in conservation of energy. More specifically, the Town, and this Town Plan's land use section, encourages compact, mixed-use development centers, which reduces energy use and allows for more efficient access to public transportation, and further encourages home occupations and home businesses, which reduce or eliminate commuting trips and ensure that products and services are available to the community from local sources. This Town Plan shall adopt density-based zoning in the next zoning bylaw revision.

Targeting economic and residential growth within areas intended for more concentrated development allows people to walk to their destinations, and makes public transit services between growth centers more economically feasible.

At the site level, a south facing building orientation and landscaping can effectively reduce energy demand. Clustering, and other energy efficient development patterns can be encouraged and/or required through local zoning and subdivision regulations.

24 V.S.A. § 4348a(A)(3): Identification Of Potential Areas For The Development And Siting Of Renewable Energy Resources And Areas That Are Unsuitable For Siting Those Resources Or Particular Categories Or Sizes Of Those Resources

New Haven is already the site of more than its allotted proportion of renewable energy resource development in the region. State statutes regarding renewable energy development are addressed primarily to communities that do not yet have such resources. New Haven therefore identifies as areas for development and siting of renewable resources those areas that have already been so developed, for the time period of the respective CPGs for those projects (which exceed the effective time parameters for this Town Plan).

To insure quality of electrical distribution services, and to insure that sufficient capacity remains on distribution lines to serve the on-site needs of New Haven's residents and businesses, distribution circuits designated as 'red' or 'yellow' by Green Mountain Power's Solar Map within the Town are unsuitable for additional distributed generation resource development. No electrical generation facilities shall be constructed on these red or yellow distribution circuits other than those producing electricity exclusively for on-site use. Similarly, single-phase distribution lines are unsuitable for distributed generation development other than for on-site use.

Existing Electricity Generation Resources

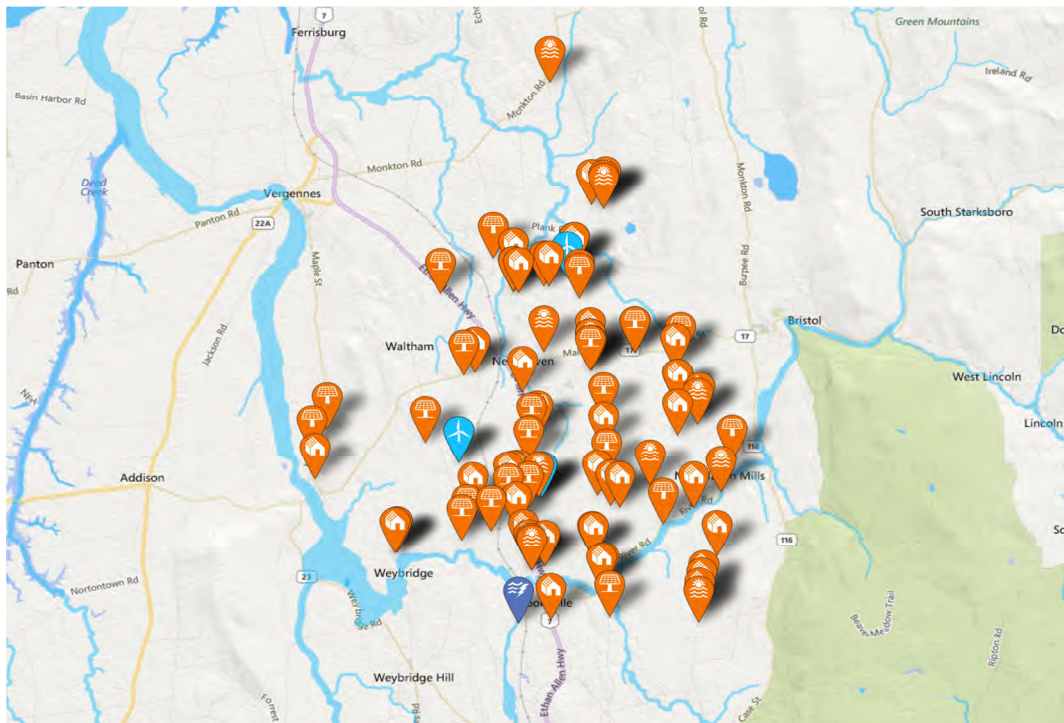


Figure 20. Locations of distributed generation resources in the Town of New Haven, November 2016. Source: Community Energy Dashboard.

Utility Infrastructure Constraints

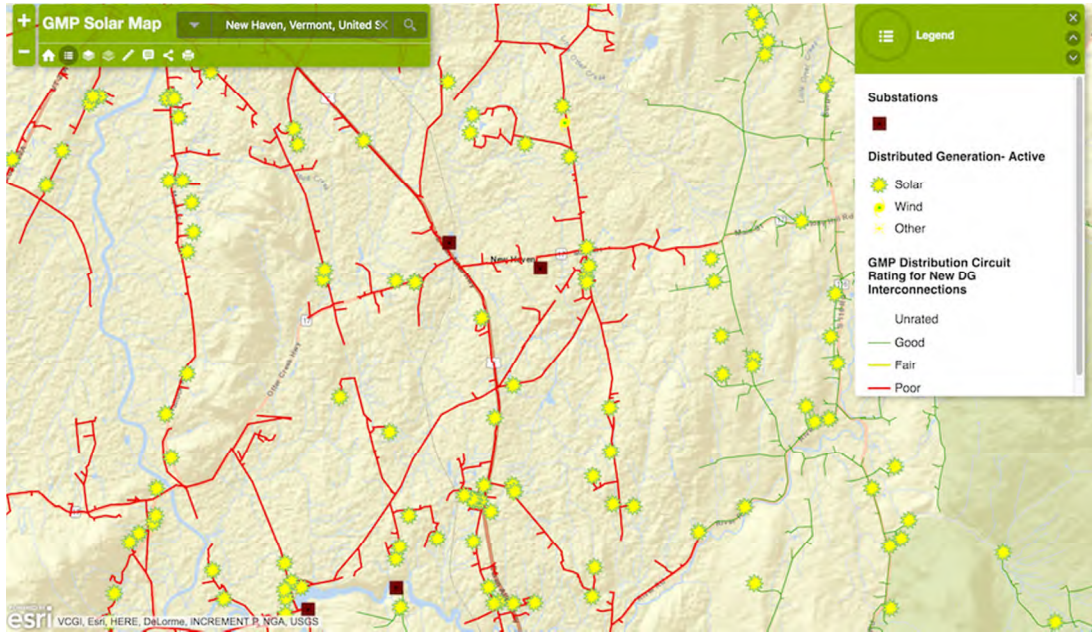


Figure 21. Green Mountain Power’s Solar Map for New Haven, Vermont, November 2016.
Most of the Town is on poor, i.e. highly constrained or over loaded, distribution lines. Source: GMP

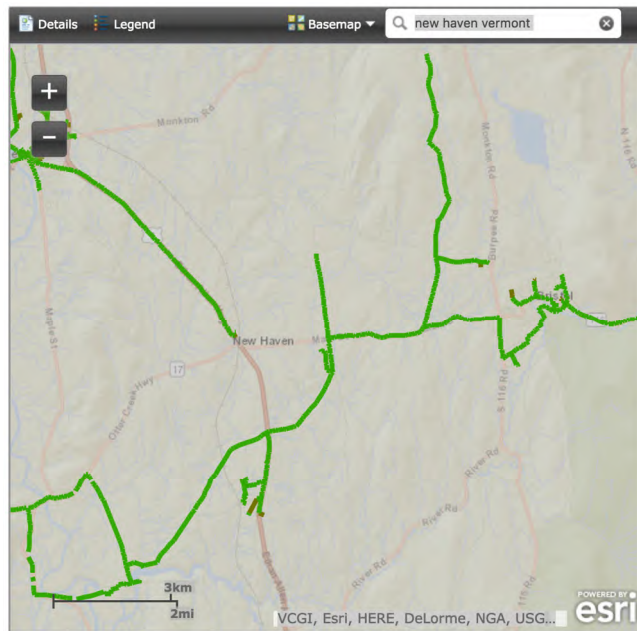


Figure 22. Availability of three phase power lines, New Haven. Source: GMP.

Environmental Constraints

New Haven residents have expressed concern about siting of distributed electrical generation facilities in locations that provide other highly valuable environmental assets, including climate change resiliency afforded by farm and forest blocks.

It is the policy of the Town of New Haven that distributed generation development, other than for on-site use, shall not occur on prime agricultural soils, or on agricultural soils of statewide significance absent mitigation as described elsewhere in this plan. Those soil designations may be found on the agricultural soils map in this Town Plan.

It is the policy of the Town of New Haven that distributed generation development, other than for on-site use, shall not occur on hydric soils. Those soil designations may be found on the wetlands and floodplains map in this Town Plan.

It is further the policy of the Town of New Haven that distributed generation development, other than for on-site use, shall not occur in the additional known and possible environmental constraint areas as indicated on these two maps below.

Additionally it is the policy of the Town of New Haven that distributed generation development, other than for on-site use, shall not compromise the Town's historic, cultural and scenic resources, as set out more specifically elsewhere in this Town Plan. Distributed generation resources for on-site use in designated scenic resource areas or affecting historic resources shall be for on-site use only AND shall be installed with sufficient aesthetic mitigation (including siting and landscaping) to preclude negative impact on these resources.

Distributed generation development shall not occur in front yards; nor within any area designated as a front, side or rear yard setback under New Haven zoning regulations, including the additional setbacks where two divergent zones meet.

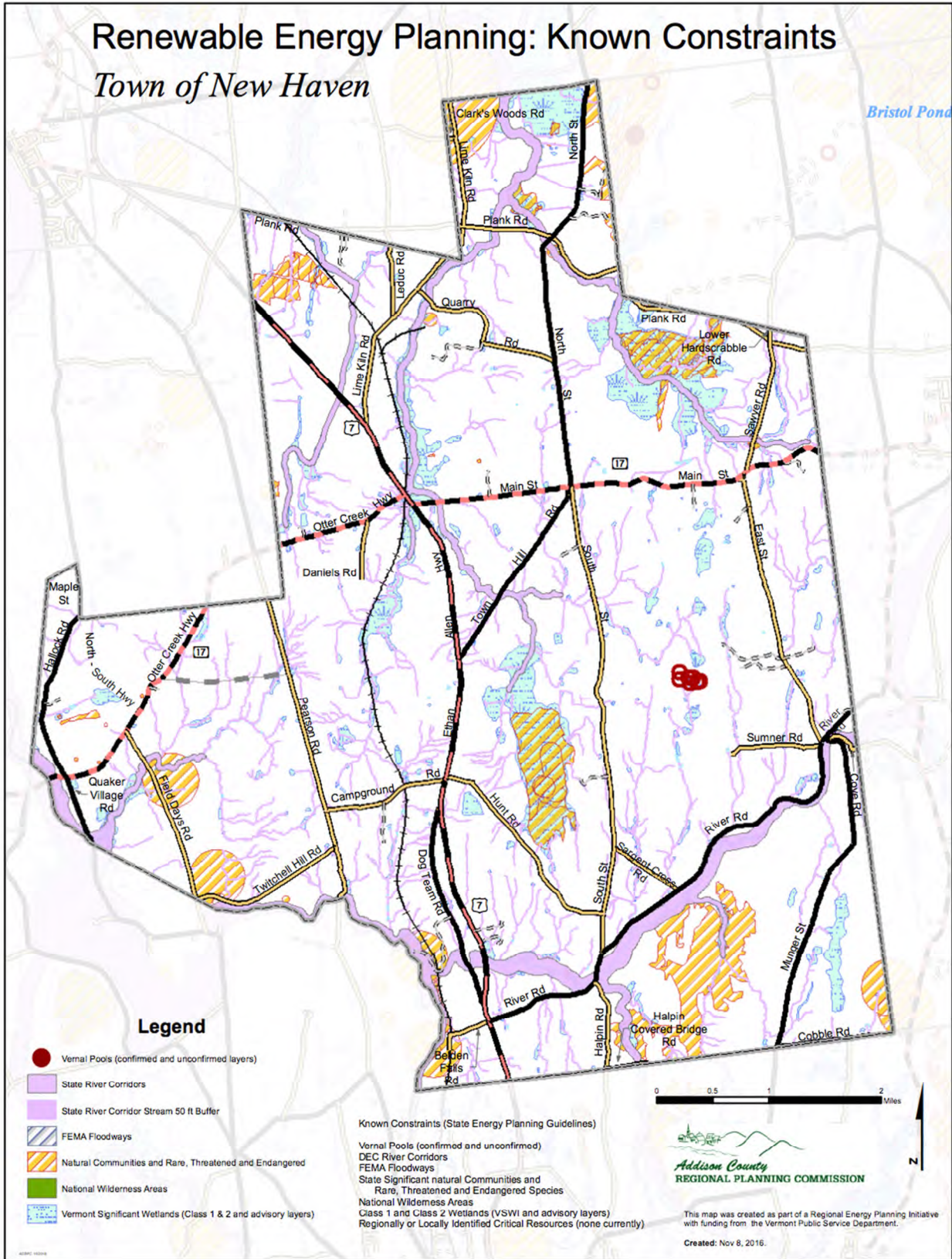


FIGURE 23. Known Environmental Constraints

Renewable Energy Planning: Possible Constraints

Town of New Haven

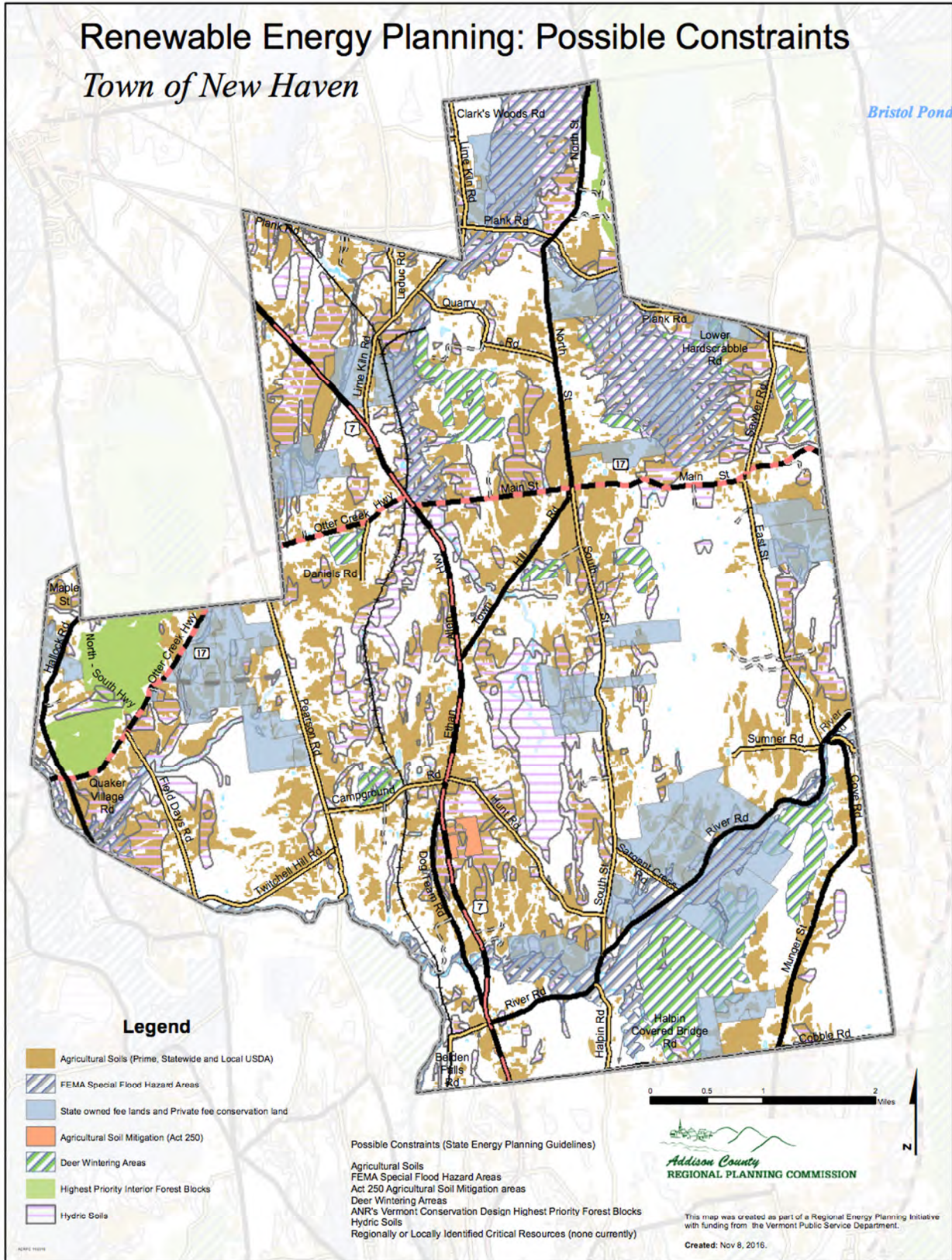


FIGURE 24. Possible Environmental Constraints

Hydroelectric Development. The waters of Otter Creek supply power to run two electrical generating plants along the Town boundary. One of these, the Belden power plant, has its generating turbines located within New Haven. The other, at Huntington Falls, generates power from turbines located within the Town of Weybridge. The Town supports the continued operation of these existing plants in providing low cost electrical power. However, the Town discourages construction of any additional plant at Battell Gorge because of that area’s recreational and ecological assets. The Belden Falls hydroelectric facility is low-impact certified, and was approved by FERC in 2014 for expanded production capacity. The Town supports this expansion, provided the facility maintains its low-impact status and its expansion is mindful of the environmental and recreational value of its surroundings and river corridor.

For the purposes of these standards, “energy plant” and “energy project” refer to any facility that generates energy, such as, but not limited to, wind turbines, solar panels, hydroelectric facilities, and fossil-fuel or other conventional energy generation projects.

Solar Electric Generation Development. New Haven has already done its part to exceed the state distributed generation electricity production goals. Therefore, since New Haven already hosts more solar photovoltaic electricity generating panels than the electricity it consumes, and since electrical output from solar panels has already strained the capacity of our distribution lines to carry electricity within New Haven, and since New Haven already has VELCO lines and does not want any more transmission lines, New Haven does not allow any solar panels on any parcel if the electricity is to be used or credited to meters off-site.

New Haven will not allow Concentrated Solar Power (CSP) technology within the Town. New Haven anticipates that the next five to ten years are likely to see additional changes and advances in electric generation technology. No existing solar photovoltaic facility shall be changed to CSP or other forms of solar electric power production.

Solar Photovoltaic Potential Siting Areas. Potential areas suitable for solar photovoltaic siting in the Town of New Haven are those areas already developed as net-metering or standard offer projects, which may remain in solar photovoltaic production within the same footprint of their present development; and residential and local business properties for on-site use for new and existing construction (preferably rooftop rather than ground-mounted installation). If GMP distribution circuit constraints are resolved -- that is, if the distribution lines go from red or yellow to green -- then solar photovoltaic development may also occur in New Haven’s designated industrial zones provided that they meet other siting and screening standards as delineated elsewhere in this Plan.

Other Electrical General Facilities Siting. Wind power generating electricity for on-site use may be developed on any residential, farm or business property in the Town exceeding

5 acres, and provided that such wind power development meets the setbacks and other siting and screening standards described elsewhere in this Plan.

Notwithstanding restrictions on electrical generation development on prime and statewide agricultural soils stated elsewhere in this Plan, existing farms may develop methane digester electric generation facilities for on-site or for sale of electricity through the utility distribution system; such development supports New Haven's agricultural economy directly by facilitating a secondary income stream through already-generated farm products (manure).

Siting of Other Renewable Energy Resources. State statutes and energy planning unfortunately all too often conflate the terms 'energy' and 'electricity'. Renewable energy resources include those addressing non-electricity energy requirements, particularly heat. The Town of New Haven allows and encourages at all locations in the Town residential, farm and business development utilizing wood heat including outdoor wood furnaces and pellet stoves, geothermal heating, heat pumps, passive solar construction, weatherization and other energy conservation measures.

Standard Offer Projects. The Town of New Haven hosts the 2.2MW Cross Pollination solar array, and as of the writing of this Town Plan is the locus of a proposal for an additional 2.2MW solar array on Field Days Road the application for which is pending before the PSB. Cross Pollination was one of the first solar photovoltaic developments in the State, and the Town supported its development as a ground-breaking move towards a non-extractive energy future. The Town was unaware at the time of the efforts that would be required to secure installation of the aesthetic mitigation components of this project.



Commercial solar development is out of scale with New Haven's landscape. This illustration, prepared by landscape architect Mike Lawrence, demonstrates that a 20 acre Standard Offer 2.2MW project is slightly larger than the Williston Home Depot and the parking lot it shares with Walmart. This is far larger than any other structure in the Town.

Standard Offer Pilot Project "Preferred Location" definition includes:
(VII) A specific location designated in a duly adopted municipal plan under 24 V.S.A. chapter 117 for the siting of a renewable energy plant or specific type or size of renewable energy plant, provided that the plant meets any siting criteria recommended in the plan for the location.

Additional Standard Offer projects are not of a scale appropriate for development in New Haven. Their size vastly exceeds that of the largest structures in the community and inherently degrades the intact rural, scenic and historic landscape. The Town therefore designates as the site of Standard Offer renewable energy plants only those locations already so developed, and only for the duration of their CPGs, which exceeds the effective length of this Town plan.

Consistency with Various State Energy Goals, as Required by 24 V.S.A. § 4348a(a)(3)

(A) Vermont’s greenhouse gas reduction goals under 10 V.S.A. §578(a);

Vermont has established ambitious greenhouse gas reduction goals. Under 10 VSA §578(a), it is established as a general goal of the state “to reduce emissions of greenhouse gases from within the geographical boundaries of the state and those emissions outside the boundaries of the state that are caused by the use of energy in Vermont in order to make an appropriate contribution to achieving the regional goals of reducing emissions of greenhouse gases from the 1990 baseline by:

(1) 25 % by January 1, 2012;

(2) 50 % by January 1, 2028;

(3) if practicable using reasonable efforts, 75 % by January 1, 2050.”

The state as a whole fell far short of meeting its 2012 goal.¹ Emissions in 2012 were approximately the same as they were in the 1990 baseline year. Between 1990 and 2012 these numbers had escalated and then returned to approximately the same as the 1990 baseline of 8 million tons per year. According to the State Agency of Natural Resources, transportation is the primary obstacle to movement towards the states’ goals: while emissions from agriculture have diminished, transportation energy use has risen significantly. Residential, commercial and industrial fuel use has also risen. The increase in these energy uses offset the reductions created in agriculture and other sectors².

The Town encourages diversification of agriculture, and development of methane digesters that will reduce agricultural greenhouse gas emissions. The Town maintains a park-n-ride and has established land and economic development patterns to diminish transportation greenhouse gas emissions. Town land use regulations strongly protect natural vegetation including forest blocks and wetlands that counter greenhouse gas emissions.

This Town Plan is consistent with the state’s greenhouse gas reduction goals.

(B) Vermont’s 25 by 25 goal for renewable energy under 10 V.S.A. §580;

This Vermont statutory energy goal states as follows:

¹ <http://digital.vpr.net/post/vermont-falls-far-short-2012-emissions-goals#stream/0>

² <http://anr.vermont.gov/sites/anr/files/specialtopics/climate/documents/newsletter/CC%20Newsletter%20Winter%202012.pdf>

§ 580. 25 by 25 state goal:

(a) It is a goal of the state, by the year 2025, to produce 25 % of the energy consumed within the state through the use of renewable energy sources, particularly from Vermont's farms and forests.

It is unclear how this goal dovetails with the goal of the 2016 State Comprehensive Energy Plan for 90% renewably-source energy by 2050.³ It would seem that the 2016 Comprehensive Energy Plan goals have superseded this 25% goal; however, the 25 by 25 goal also seems to indicate a desire for energy generated within the state from “Vermont’s farms and forests”, which would further indicate a preference for wood, biomass, and biomethane (cow power) energy generation rather than the wind, solar and hydropower emphasized in other state renewable energy plans. Since much of Vermont’s energy usage is in transportation, however, this goal presents difficulties .

This New Haven Town plan is consistent with this state energy goal -- and has in fact met it within the thermal sector. As indicated by the Community Surveys data referenced in the analysis of heat resources above, 30% of heating energy in New Haven comes from non-extractive resources; most of this is wood and wood pellets.

Renewable energy is produced within the Town in excess of the use of energy within the Town. The Town also supports energy generation facilities -- appropriately sited and operated -- that arise from agricultural practices such as biomethane energy generation. The Town also encourages use of energy conservation building techniques including passive solar construction and geothermal heating (such as that at the Town Offices), which comprise provision of energy through local resources.

The Town also recognizes that our farm and forest resources contribute not only to our high quality of life but also to clean air and the reduction of carbon emissions. Protection of our farmlands and forest blocks makes a significant contribution to greenhouse gas emission goals.

(C) Vermont’s building efficiency goals under 10 V.S.A. § 581;

§ 581. Building efficiency goals

It shall be goals of the State:

³http://publicservice.vermont.gov/sites/dps/files/documents/Pubs_Plans_Reports/State_Plans/Comp_Energy_Plan/2015/2016CEP_ES_Final.pdf

(1) To improve substantially the energy fitness of at least 20% of the State's housing stock by 2017 (more than 60,000 housing units), and 25% of the State's housing stock by 2020 (approximately 80,000 housing units).

(2) To reduce annual fuel needs and fuel bills by an average of 25% in the housing units served.

(3) To reduce total fossil fuel consumption across all buildings by an additional one-half % each year, leading to a total reduction of six % annually by 2017 and 10% annually by 2025.

(4) To save Vermont families and businesses a total of \$1.5 billion on their fuel bills over the lifetimes of the improvements and measures installed between 2008 and 2017.

(5) To increase weatherization services to low income Vermonters by expanding the number of units weatherized, or the scope of services provided, or both, as revenue becomes available in the Home Weatherization Assistance Fund.

The Town is dedicated to energy cost savings for all Town-managed buildings and facilities to ensure low cost annual operations into the future. This commitment includes, but is not restricted to, purchase or adaptation of the most efficient lighting, insulation and heating systems for these buildings.

In addressing residential energy efficiency, we endorse the standards put forth in the state's Model Energy Code for new construction. Under this legislation, all new residential construction is required to meet these standards and be so certified by the builder.

In addition to energy codes for new residential, commercial and public buildings, there are a number of other programs offered by the state to promote municipal energy efficiency and the use of renewable energy resources, such as the School Energy Management Program and programs that support the conversion of school heating systems to wood-burning systems. Municipal energy savings can continue to be realized through regular energy audits of municipal buildings and the use of "life cycle costing" practices that incorporate long-term energy savings in the fiscal analysis of facility construction and equipment purchases. Such costing methods often demonstrate that long term energy savings more than offset the higher initial purchase or construction cost of energy-efficient equipment and building improvements. The Town will explore methods of incentivizing energy efficient residential and commercial development through its local zoning and subdivision regulations and local energy assistance programs.

In residential development that passes through the Town land use approval processes including Planned Unit Development or Subdivision approval, the Town will encourage

additional energy conservation measures including passive solar construction, geothermal heating, heat pumps, and high-efficiency lighting and appliances.

(D) State energy policy under 30 V.S.A. § 202a and the recommendations for regional and municipal energy planning pertaining to the efficient use of energy and the siting and development of renewable energy resources contained in the State energy plans adopted pursuant to 30 V.S.A. §§ 202 and 202b (State energy plans)

30 VSA §202a states:

It is the general policy of the state of Vermont:

(1) To assure, to the greatest extent practicable, that Vermont can meet its energy service needs in a manner that is adequate, reliable, secure and sustainable; that assures affordability and encourages the state's economic vitality, the efficient use of energy resources and cost effective demand side management; and that is environmentally sound.

This New Haven Town Plan is consistent with the policy of the State of Vermont set out in 30 VSA §202a. New Haven seeks to ensure that energy service in the Town of New Haven is adequate, reliable, secure and sustainable by ensuring that our local distribution lines are not saturated and our local utility infrastructure not overloaded so that Town residents may continue to enjoy high quality continuous electrical service. The Town's actions also seek to ensure that local residents and businesses will have access to line capacity necessary for distributed generation that serves their on-site needs, thus containing their electricity costs as well ensure a robust local economy with a stable energy infrastructure to support local and home businesses and occupations.

The Town is mindful that GMP filed on August 1, 2016 for a rate increase due to the increased costs to the utility of distributed generation, particularly net metering. The Town accordingly seeks to limit additional distributed generation facilities within the Town to those which serve primarily on-site needs; keeping generation tied closely to demand will obviate the need for transmission of distributed generation, and thus help keep utility bills low for Town residents as well as increasing the stability and reliability of the local distribution elements of the electric grid. The Town is also mindful that inappropriate distributed generation development diminishes property values and thus tax revenue, thereby also increasing costs to Town residents. The Town encourages energy conservation, and precludes or significantly curtails facilities development in environmentally sensitive areas including prime agricultural soils, wetlands, forested areas, special habitat areas, as well as in scenic viewsheds and in locations that would negatively impact historic and cultural resources.

As of this writing, the State energy plans do not yet contain specific recommendations for regional and municipal energy planning. The 2016 Comprehensive Energy Plan was adopted prior to the legislature's adoption of Act 174.⁴ Page 61 of that CEP, however, adopts by reference the Vermont Natural Resources Council and Vermont League of Cities and Towns guidebook, *Energy Planning and Implementation Guidebook for Vermont Communities*.⁵ This 2011 guidebook is somewhat out of date, but still provides a useful reference framework for municipal energy planning. The guidebook in turn adopts by reference the Vermont Agency of Commerce and Community Development Planning Manual. The first two of three volumes of the 2016 edition of the Planning Manual have been released at the time of this writing of this 2016 New Haven Town Plan.⁶

The Vermont Department of Public Service on November 1, 2016, released a checklist for communities and regional planning commissions to use in devising an Enhanced Energy Plan; that checklist mirrors the statutory requirements set out in this Plan.

(E) the distributed renewable generation and energy transformation categories of resources to meet the requirements of the Renewable Energy Standard under 30 V.S.A. §§ 8004 and 8005; and

State statute is unclear as to the standard by which municipalities are anticipated to meet this requirement relative to a determination of energy compliance. However, this New Haven Town Plan meets or supports the provisions of 30 VSA §§8004 and 8005 by being host to a wide array of renewable energy resources including each of the categories listed by RES (with the present exception of biomass/biomethane), by encouraging the retirement of RECs, and by encouraging energy conservation measures.

The Town of New Haven hosts significant quantities of renewable energy generation resources (§8005(a)(1)); distributed renewable generation facilities including SPEED/Standard Offer and net metering solar photovoltaic generation (§8005(a)(2)); energy transformation projects including encouraging energy conservation, and hosting a planned HVDC converter facility bringing renewably-sourced power through the regional transmission lines (§8005(a)(3); the Town is striving to ensure sufficient capacity remains on local distribution circuits to allow for local development of biomass or biomethane facilities that support the local farm and forestry economy (§8005(c); and the Town hosts a

⁴ https://outside.vermont.gov/sov/webservices/Shared%20Documents/2016CEP_Final.pdf

⁵ <http://vnrc.org/wp-content/uploads/2012/08/Final-Guide-4-27-11.pdf>

⁶ <http://accd.vermont.gov/community-development/town-future/municipal-planning-manual>

GMP-owned low-impact certified hydropower facility (§8005(d)). The Town also hosts, at present, four small wind-power generation facilities for on-site use.

(4) meet the standards for issuing a determination of energy compliance included in the State energy plans.

It is unclear how the State legislature intended this Act 176 requirement of 24 V.S.A. § 4348a(a)(4) to differ from the same requirement stated in 24 V.S.A. § 4348a(a)(3)(D), above. They appear to be identical -- compliance with State energy plans. As stated above, this New Haven Town Plan meets these standards.

Siting, Screening And Performance Standards Applicable To All Utility/§248 Projects In New Haven

The Town's experience with recent projects (further described in the Energy Plan section) has led to the following specific standards to be required of any utilities or other §248 developers, including energy, fuel, and communications project developers, to limit and mitigate impacts on the Town's health, safety and scenic character. The Town expressly intends these standards to reflect the position of the Town and to be given the maximum deference, weight and consideration in any proceeding before the Vermont Public Service Board or other regulatory agencies or courts. These standards are in addition to standards pertaining to ground-mounted solar development siting and screening contained in the Energy Plan section.

It is also the Town's policy to intervene in utility and other §248 project review processes for project proposed in other towns at locations near New Haven's borders, and to request that these same standards be applied to the extent that the proposed project would affect New Haven property, scenic views, historic and natural resources, or aesthetics from public roadways, recreational resources or New Haven residences.

- **Noise.** Strict noise limits must be imposed on any substations, converter stations, natural gas gate stations, generating plants, and any other utility or merchant §248 projects or infrastructure to avoid adverse impacts on the Town and its residents. To comply with this standard, noise levels at the property line, or the line of legal control for a project (whichever is lesser) cannot exceed 45dBa between 8 a.m. and 5 p.m. Monday through Friday and 40dBa at all other times. Such standards must be imposed in an enforceable manner requiring reasonable monitoring and timelines for compliance.

- **Aesthetics.** Utility and other §248 infrastructure must be sited in a manner that minimizes impacts on scenic views, public highways, and nearby property owners. Each project must incorporate screening that breaks up the visible area of the project in a manner that: prevents unobstructed views of the project; mitigates adverse aesthetic impacts on views from residences, public highways and recreation resources; and harmonizes the project with the character of the surrounding landscape and neighborhood including historic and scenic resources and natural areas. All projects must comply with the requirements of any duly adopted siting and screening bylaws or ordinances.
- **Health and Safety.** Utility and other §248 infrastructure must be developed and maintained with safeguards to preserve the health and safety of residents and visitors to New Haven. Developers of projects that pose unique or increased health or safety risks must provide public safety agencies serving the Town with training, equipment and compensation commensurate with the increased risks.
- **Landowner and Public Impacts.** Utility and other §248 projects must make full use of existing infrastructure before new infrastructure is built. Proposed utility infrastructure must be designed to provide substantive economic benefits to the Town and its residents. Developers of projects that impose significant adverse effects on New Haven or individual residents or landowners must provide compensation to the Town and affected parties.
- **Eminent Domain.** The use of eminent domain to take property or property rights in New Haven is strongly discouraged. Utilities and other §248 project developers must use all available measures to reach voluntary resolutions with property owners that do not require the use of eminent domain.
- **Electric Transmission Lines.** Electric transmission and distribution lines, including those used to service new development in the Town, must meet the following standards:
 - All transmission lines and infrastructure must be constructed underground.
 - If lines must be constructed above ground, single poles, as opposed to H-frame poles, will be used in all locations clearly visible from public vantage points.
 - In locations where the lines will be clearly visible from public vantage points, multiple lines shall be carried on a single set of poles where ever feasible to minimize visual clutter, with recognition that this will need to be balanced with the Town’s interest in avoiding excessively tall poles.
 - If new poles are proposed to be placed alongside existing poles, the new poles will be aligned with existing poles to minimize visual clutter and will not be located any closer to the highway than any existing pole.
 - Where above ground electric transmission lines cross state or Town roads, the distribution lines along those roads must be placed underground as needed to

- avoid increasing the height of the transmission line and associated poles.
- Wherever landscaping or other aesthetic mitigation is required, an easement or property will be purchased as needed to allow adequate space to accommodate the required mitigation. Landscaping along the road should consist of salt-tolerant shade trees to be planted at a minimum of 50-foot intervals within landscaping buffer where large trees will not interfere with the lines or access to adjoining property. Under the lines, a naturalistic buffer of small trees and shrubs should be planted.

Solar Siting, Screening And Setbacks

30 VSA §248 states, in regards to municipal authority to adopt screening bylaws for ground-mounted solar arrays:

(b) Before the Public Service Board issues a certificate of public good as required under subsection (a) of this section, it shall find that the purchase, investment or construction:

(1) With respect to an in-state facility, will not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality. However:

...

(B) with respect to a ground-mounted solar electric generation facility, shall comply with the screening requirements of a municipal bylaw adopted under 24 V.S.A. § 4414(15) or a municipal ordinance adopted under 24 V.S.A. § 2291(28), and the recommendation of a municipality applying such a bylaw or ordinance, unless the Board finds that requiring such compliance would prohibit or have the effect of prohibiting the installation of such a facility or have the effect of interfering with the facility's intended functional use.

New Haven's relatively flat and open topography and its proximity to electrical transmission infrastructure has made the Town a particularly attractive location for solar development. As a result, the Town has experienced a dramatic increase in applications for both small- and large-scale solar energy generation projects. In fact, the Town has the second most solar photovoltaic facilities of any Town in the State, according to the Community Energy Dashboard data. The siting of solar projects has created considerable controversy and discussion among the Town's residents, who have made their views known at public hearings, Town meetings, planning forums and in survey responses submitted to the Planning Commission.

Many New Haven residents - including supporters of renewable energy - have serious concerns about the impact of the increasing number of poorly sited solar facilities on New Haven's rural, agricultural, and scenic character. Based on survey results and public input, it is evident that a clear majority of residents are in favor of reasonable screening, siting and size requirements to limit the adverse impacts of solar and other renewable energy facilities.

The Town of New Haven has adopted the following community standards for determining whether an energy generation project is in conformance with this Plan. The Town expressly intends these standards to reflect the position of the Town and to be given substantial consideration in any proceeding before the Vermont Public Service Board or other regulatory agencies or courts. The Town will adopt local ordinances and bylaws implementing these standards as authorized by Vermont's Act 56 of 2015. The following standards are in addition to those standards applying to all utility and other §248 projects as set out above.

It is also the policy of the Town to intervene and participate, to the extent that the Selectboard deems it appropriate and in the Town's interest, in any §248 proceedings for energy generation plant proposals located in adjoining Towns at locations near New Haven's borders, and to request that such projects comply with the following standards to the extent they impact New Haven property or scenic, historic or natural resources, or the view from New Haven residences, public roadways or recreation resources.

Energy Plant Siting Standards. The following community siting standards are intended to avoid and limit adverse impacts associated with energy generation facilities by providing guidelines for siting such development in appropriate locations and for designing such development to be compatible with the Town's rural, agricultural and scenic character. These standards are also intended to achieve proportionality within the state's energy goals and ensure that projects result in a net benefit to the Town.

Use Classification. A small net-metered or off-grid renewable energy facility, including a solar array, small wind facility or combined system intended solely to serve an individual residence or business and generating less than 15kW, will be considered an accessory structure allowed in all zoning districts in which such structures are allowed. No other energy generation facility type or size shall be considered a permitted use in any district in the Town; while such uses may not be subject to municipal land use regulation under 30 VSA §248, they shall be considered unenforceable zoning violations for zoning purposes. Accordingly, no energy generation or other §248 facility shall have the effect of converting

the land use classification of any parcel or portion of a parcel of land to a more intensive use than that of the zone in which the parcel is located.

Abandonment and Decommissioning. Energy generation plant permits or certificates must include provisions for system abandonment, decommissioning and site restoration. Developers of energy projects and landowners hosting such projects must jointly and severally provide the Town with appropriate sureties or other assurances to guarantee decommissioning of the project, infrastructure removal, and site restoration.

Access. All new electrical service lines must be installed underground to the maximum extent feasible.

Project access must be provided from existing access roads where physically feasible, and access roads and utility corridors should be shared to minimize site disturbance, resource fragmentation, the creation of additional edge habitat, and the introduction and spread of invasive exotic species.

The project development must obtain and comply with right-of-way work permits and overweight truck permits where necessary; and must mitigate and/or compensate any identified impacts to public highways from plant construction, operation and maintenance, including highway improvements required to accommodate the plant.

Public access to generation and transmission plants, including substations, must be restricted as necessary to protect public health and safety.

Signs. Signage associated with energy generation plants must be limited to the minimum required to meet federal or state code requirements. Energy facilities and structures shall not be used for display or advertising purposes. Signs, except for owner and manufacturer identifications and safety warnings that do not exceed one square foot, are prohibited on all structures.

Lighting. In accordance with the town's Dark Sky policy, energy facilities, including wind and transmission towers, are not to be artificially lighted except as necessary to meet Federal Aviation Administration requirements, or, at the minimal levels feasible, as necessary to provide safe access to and conditions on the site for required monitoring or maintenance purposes, and/or as required to meet federal or state code requirements. All outdoor lighting fixtures must be fully-shielded and must not result in light trespass or glare on roads or surrounding properties.

- ◆ An Obstacle Collision Avoidance System (OCAR) as approved by the FAA shall be used to avoid visual lighting impacts. If an OCAR cannot be approved, the FAA lighting alternative that results in the least amount of visual

disturbance, and minimizes project visibility from public roads and vantage points, shall be incorporated in system design.

◆ Substation lighting should be the minimum necessary for site monitoring and security, should be cast downward, and must not result in light trespass or glare on adjoining properties.

Interference. Facility operation shall not reduce or interfere with television, radio, telemetry, or other telecommunications signals, including public safety communications systems.

Codes. Energy generation plants must comply with all manufacturer specifications, state, federal or industry safety and electric codes, and utility connection requirements. The developer must provide documentation of code compliance.

Forest Conservation. Clear cutting of forestlands to accommodate a project with a footprint larger than ½ acre is prohibited. Energy facilities, including wind towers and other generation facilities, transmission and distribution lines, accessory structures and access roads are to be located along existing tree lines, or on otherwise disturbed forestland, as necessary to avoid the fragmentation of, and to minimize and mitigate adverse impacts to productive timber stands and critical forest habitat. Forestland intended for commercial biomass production must be sustainably managed and harvested in a manner that preserves critical forest habitat and long-term forest health.

Sensitive Natural Resource and Special Hazard Areas. With the exception of transmission and distribution lines, commercial projects and energy plants that are not attached to existing or permitted structures must not be located within special flood hazard areas, river corridors or within 50 feet of any surface waters, wetlands and any required buffers, or on steep slopes with a natural (pre-development) grade in excess of 15%.

Conservation/Open Space Areas. Energy plants must be sited to avoid significant wildlife habitat and travel corridors including, but not limited to, deer wintering areas and core habitat areas. Development of energy plants on conserved land (such as land subject to a conservation easement or land under public ownership for conservation purposes) is not appropriate and is prohibited.

Facility Siting Standards Site Designation. Sites planned for or intended to accommodate planned energy facility development, including the location of existing and planned commercial and net-metered generation facilities and utility corridors, are to be shown on site development and subdivision plans reviewed by the town.

Building-Mounted Solar Panels. Solar panels on existing or permitted buildings should be allowed in all land use districts.

Glare. All reasonable efforts must be taken to prevent glare that would adversely impact drivers or nearby residents, including but not limited to the use of non-glare equipment and infrastructure, and appropriate screening.

Agricultural Soils. Energy projects must not be sited or otherwise impact agricultural soils classified as “Prime” or of statewide significance by the USDA Natural Resources Conservation Service (NRCS).

Agricultural Land and Open Space. Energy facilities, including solar arrays and other generation facilities, transmission and distribution lines, accessory structures and access roads are to be located on nonagricultural land or along field edges to avoid fragmentation of, and to minimize and mitigate adverse impacts to agricultural land and open fields.

Height. Zoning district height limitations under local bylaws, where applicable, shall apply to renewable energy facilities. The Town shall adopt height limitations in conjunction with its next zoning bylaw revision.

◆ The maximum tower height for net-metered, or similar off-grid wind energy facility shall not (a) exceed 120 feet in total height, as measured vertically from the ground to the rotor blade tip at its highest point, or (b) extend in total height more than 30 feet above the existing tree canopy or other obstructions within 300 feet of the tower, whichever is greater.

Ground Clearance. The blade tip of any wind turbine shall, at its lowest point, have a ground clearance of no less than 30 feet, as measured vertically from the ground to the tip of the rotor blade at its lowest point.

Shadow Flicker and Ice Throw. Wind energy facilities shall be sited or screened so that shadows cast by rotor blades will not result in shadow flicker on occupied buildings located in the vicinity of the project, and shall not result in shadow flicker or ice throw on any land other than that owned by the host landowner.

Burial. Utility controls and onsite line connections shall be wireless or buried, except at the point of connection with distribution lines.

Designated Scenic Areas. The documented historic, rural and scenic character of the following areas in the Town of New Haven shall be preserved. New energy facilities sited within or as viewed from these areas shall not create a significant physical, visual, audible,

or historically incongruous or incompatible intrusion into these areas. New facilities, including generation facilities greater than 15 kW, substations and transmission lines, are specifically prohibited within or as viewed from these areas unless significant associated impacts can be avoided, for example through facility siting, screening or line burial.

- ◆ Designated historic districts, including the Village Center, and districts deemed eligible for National Historic Register status, including Brooksville;
- ◆ Town-owned conservation and recreation lands;
- ◆ Views from locally designated scenic roads, as listed elsewhere in this Plan, or as subsequently designated by the New Haven Select Board;
- ◆ Scenic Viewsheds as identified elsewhere in this Plan.

Historic Districts, Sites and Structures. Energy facilities, including wind systems and solar photovoltaic (PV) or thermal panels, that are located in the town's three designated historic districts, or on or adjacent to properties with federal or state-listed historic structures, are to be sited in accordance with current Secretary of the Interior's Standards for Rehabilitation, and the following:

- ◆ The historic character of listed properties and structures shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
- ◆ Ground installations may be preferred to roof mounted installations on certain historic structures. Ground installations shall be installed in locations that minimize their visibility, such as a side or rear yard, and be screened from view of public rights-of way and adjoining properties.
- ◆ Roof-mounted systems may be placed on new construction, non-historic buildings and additions, and may be appropriate or preferred for certain historic structures, and for rehabilitation or expansion projects on historic structures.
- ◆ Solar panels and other roof- or wall-mounted structures shall not be placed on primary building facades, including street-facing walls or roofs.
- ◆ Roof- or building-mounted systems on an historic structure shall not physically damage the structure, alter its character-defining features, including existing roof lines or dormers, nor obstruct significant architectural features such as overlaying windows or architectural detailing. Attachment points must be minimized and allow for future system removal.

◆ Roof-mounted installations are to be placed below and behind parapet walls and dormers, on rear-facing roofs, where feasible. Panels are to be mounted flush with and at the same angle as the existing roof surface and, on flat roofs, set back from the roof edge to minimize visibility. They should not be visible above the roofline of the primary facade. Panels and mounting systems must be compatible in color to established roofing materials to minimize their visibility

Solar project developers are directed to the National Park Service’s Technical Preservation Service publication/website titled “Solar Panels on Historic Properties” for further guidance and examples.⁷

Siting and Screening Requirements

Energy plants must be sited in a manner that does not impact scenic views and visibility from public highways and nearby properties. Each project must incorporate screening that obscures the view of the project in any designated scenic viewshed or from any designated scenic road or corridor. In any other location, the project must incorporate screening that effectively breaks up the visible area of the project in a manner that: prevents unobstructed views of the project; mitigates adverse aesthetic impacts on views from residences and public highways; and harmonizes the project with the character of the surrounding landscape and neighborhood. In addition to meeting these general standards, the requirements of any duly adopted siting and screening bylaws or ordinances must be complied with.

Examples of sites containing features that will help an energy plant to comply with New Haven’s community standards include the following:

- Sites that make use of existing hedgerows, vegetation, topography and other visual obstacles to reduce impacts on scenic views, public highways and nearby property owners.
- Sites with significant setbacks from public highways, property lines and residences.
- Sites located on or adjacent to areas that are already impacted by existing industrial development, former gravel pits or landfills, brownfields, and the like.
- Sites that have been identified by the Town as particularly suitable for development such as industrial zones and which otherwise meet these community standards.

⁷ <https://www.nps.gov/tps/sustainability/new-technology/solar-on-historic.htm>

Examples of sites containing features that will not comply with New Haven's community standards, and which are therefore prohibited, include the following:

- Sites that lack natural screening from public highways and nearby properties, and cannot be effectively screened by permanent, year-round plantings or other suitable screening.
- Sites that fail to meet setbacks or other development restrictions set forth in existing Town bylaws and ordinances (including restrictions applicable to either energy and/or commercial development).
- Sites that have been identified by the Town as particularly important for conservation, natural resources or scenic views.
- Sites that cause fragmentation and loss of the working landscape, such as forestland, open farmland, and/or prime agricultural soils.
- Land that is subject to conservation easements or other similar restrictions.
- Ridgelines and hilltops, including both ridgelines and hilltops that silhouette against the sky and those that silhouette against taller mountains.

Not all properties are suitable for development of energy projects. The fact that a developer may already have leased or purchased a particular project site should not carry any weight in the analysis of whether the project is suitable. If a project cannot comply with these standards, then the project is unsuitable for that site, and the developer must select a different and more appropriate site.

Any ground-mounted solar generation plant over 15 kW, or commercial structure with a similar footprint, must be sited and designed so that it will create no greater burden, including adverse visual impacts, on surrounding property owners or public infrastructure than it does on the property on which it is sited, unless the affected neighbor(s) consents in writing. For example, a resident must not site one or more free-standing solar panels in a location selected to minimize the visibility of the panel(s) from his/her residence, while placing the panel(s) where it will be more visible from a neighboring residence or a public vantage point. If the only feasible location for a solar plant or commercial structure on a property would violate this principle and the affected neighbor(s) do not consent to that location, then the property must be considered unsuitable for an energy plant.

In addition to screening, onsite mitigation should include placement of the remainder of the underlying parcel in permanent conservation easement, agricultural or silvicultural easement.

Screening must be sufficient to block the view of the panels from all vantage points - public or private.

Visual Impacts. Applicants must demonstrate through site planning, facility siting and proposed mitigation that the visual impacts of new and upgraded energy facilities will be minimized as outlined in the standards set forth below:

- ◆ All energy facilities and accessory structures are to be designed and constructed of materials, colors, and textures that blend into the surrounding natural or built environment to the extent feasible. Wind towers, turbines and blades shall be of a neutral, non-reflective and unobtrusive color (e.g., white, off-white or gray).
- ◆ Facilities are to be sited to outside of, or to the edge of scenic views or viewsheds so that they are not a prominent focal point.
- ◆ The facility should not extend above the background horizon line.
- ◆ The facility should be screened from view through the use of existing topography, structures, vegetation or strategically placed tree, shrub and ground cover plantings that do not block distant views.

Setbacks. Except for transmission and distribution lines and utility connections, all energy facilities – including substations, commercial, utility and non-utility generation facilities and accessory structures – must meet minimum setback requirements for the zoning district(s) in which they are located, including enhanced setbacks required at the boundaries of two zoning districts.

In addition:

- ◆ All ground-mounted wind energy facilities must be setback at least 1.5 times the total facility height, as measured vertically from the ground to the rotor blade tip at its highest point, from all property lines, occupied buildings on adjoining properties, overhead utility lines, public and private rights-of-way and established trail corridors, unless easements are secured from adjoining property owners.
- ◆ Guy wires used to support wind towers are exempt from minimum district setback requirements, but shall be set back at least 20 feet from all property lines.
- ◆ A building-mounted wind turbine or solar panel must meet minimum setback requirements for the building on which it is mounted. The installation of a net-metered or similar off-grid energy system on a nonconforming structure will not constitute an increase in the degree or amount of nonconformance under local regulations.

◆ Facility setback distances from property lines, or from occupied structures in existence at the time of application, should be increased as necessary to mitigate identified public health and safety hazards or nuisances to adjoining property owners (e.g., noise, vibration, glare, shadowing and shadow flicker, ice throw).

Subdivision. Energy and telecommunications facilities are frequently developed under lease or easement agreements with underlying landowners. State land use statutes authorize towns to adopt subdivision regulations addressing leases that are made for land development purposes. It is the policy of the Town of New Haven to require that prior to the lease or sales of land for land development -- including for §248 project development -- where the designated area for the proposed land development, together with its access ways and any areas required for aesthetic mitigation and setbacks, meets or exceeds the size of a lawful parcel within the zoning district in which it is located, the landowner must submit the proposed lease or sale to subdivision review and approval. Where the designated area for the proposed land development is smaller than that required for a lawful parcel within the zoning district in which it is located, no sale of a sub-sized parcel may occur; the project may proceed by lease or easement, without subdivision, and the designated development area shall continue to be considered lawfully as part of the underlying parcel. Lands leased for §248 project purposes may not be expanded or converted to any other use without first obtaining all applicable state and local land use permits. The Town shall adopt any amendments to its subdivision bylaws necessary to enact this policy.

Natural Resources

Natural Areas. The Vermont Department of Fish & Wildlife has identified six areas in New Haven that are considered “significant natural communities” and/or habitats of rare species. The portion of Battell Gorge has potential as an important ecological reserve, since the Middlebury Area Land Trust, Middlebury College and the University of Vermont already have significant holdings in the Gorge area. It is in the Town’s long-term interest to ensure that all these areas are protected from development.

There are several deer wintering areas mapped by the State Fish and Wildlife Department. The largest is along the New Haven River between River Road and Munger Street. The next largest surrounds the wetland on the East Branch of Little Otter Creek. To maintain healthy deer populations, development should not occur within these areas.

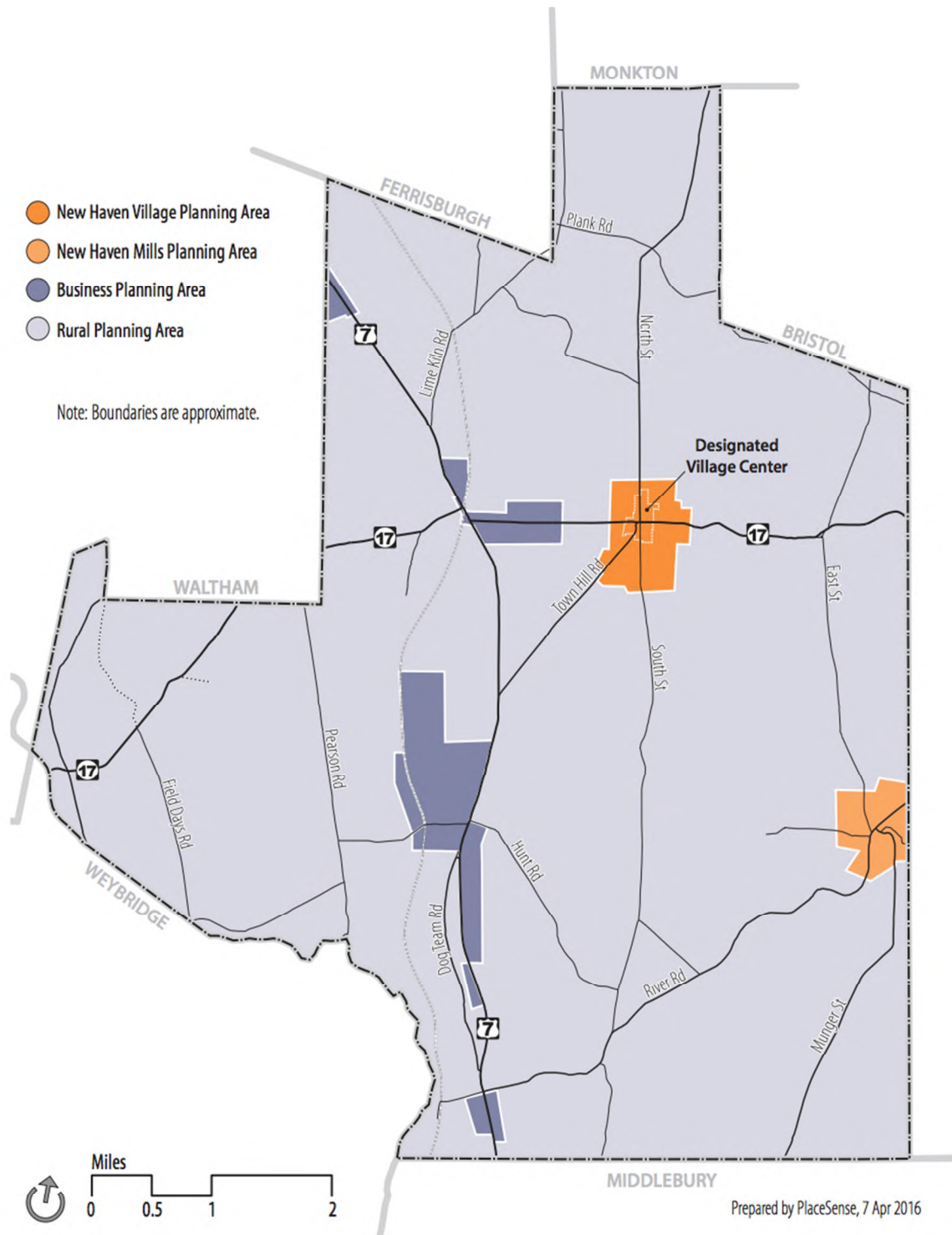


Figure 28. LAND USE PLANNING AREAS MAP

(Note: Base map omits the Town Trail and a small segment of the North South Highway; see VTRANS map for these elements, and Note Regarding Maps elsewhere in this Plan. Potential Municipal District is not indicated, but is intended to comprise the

State Designations. The state has recognized a portion of the Village Center Planning Area as a historic district and has inventoried its contributing historic structures. The importance of these historic resources are critical components of the character of this area and the Village Center's sense of place. Town regulations shall ensure that they provide flexibility for the ongoing use of historic structures and discourage demolition or inappropriate renovations.

The Town's Village Center designation

New Haven Mills Village Planning Area

Character. Historically, New Haven Mills was one of several distinct centers in Town and it was focused around the waterpower resources of the New Haven River. Currently, this area is primarily residential, with a core of historic homes on small lots.

Density and Uses. There is limited potential for additional development within the core and this Plan envisions continued moderate density uses, primarily residential in this area. Higher density zoning standards will be implemented in this area, with consideration of incentives for clustered, energy-efficient, affordable or other types of residential development that further the goals of this plan.

Rural Planning Area

Character. The rural planning area is the heart of New Haven's scenic and cultural resources. This area defines the cultural heritage and quality of life of the Town, and contributes immensely to the Town's

has made income-producing properties eligible for state tax credits, which should be used to support maintenance and appropriate rehabilitation of historic structures. Village Center designation has also enhanced the Town's ability to obtain grant funding for public improvements in this area. The Town will make all reasonable efforts to maintain its Village Center designation and to remain abreast of, and take advantage of, potential grant programs or other opportunities to enhance and maintain this Village Center.

agricultural economy and robust property values. The character of this area is agricultural and rural residential with relatively low- to medium-density residential development typically sited close to Town roads or on private roads. Flexible, density-based residential development standards in this area, together with preclusion of non-compatible land uses, will be implemented through subdivision and zoning regulations to preserve farm land and scenic viewsheds. In general, this would not constitute a change in overall density, but allows flexibility to place house lots as best suits the individual property. Clustering of homes on smaller lots, rather than dispersed development, is encouraged in order to conserve larger areas of productive or open space land.

Development. This planning area includes most of the Town's productive agricultural land. All available and feasible means shall be used to preserve prime agricultural farmland and

limit development that is out of character with the traditional landscape. For example, large-scale, fragmentary, and sprawling residential development in this area is prohibited. Commercial and industrial development is prohibited with the exception of agriculture, forestry, a limited number of specific outdoor recreation uses, and appropriately sized and located home businesses and home occupations. Over all, density of development must remain low, with any additional non-farm residences carefully sited to minimize impacts on quality farmland and scenic and natural resources.

Specific design standards shall apply to new development in the Rural Planning Area in recognition of the existence of a concentration of agricultural and forest lands to protect the extraordinary scenic resources such lands and uses provide. Any land use in this area, including single-family dwellings, shall require approval under those regulatory guidelines. Development other than agricultural structures or single family residences developed on lots existing as of January 1, 2017 in this area shall not be sited in prominently visible locations on hillsides or ridgelines, and shall, at a minimum, utilize earth tone colors and non-reflective materials on exterior surfaces of all structures, and must minimize clearing of natural vegetation. Agricultural structures and single family residences shall be encouraged to follow the same guidelines, and/or to harmonize

the structure with the surrounding built and natural environment.

Conservation and Resource Protection. As illustrated on the resource maps included in this plan, New Haven has significant natural areas with characteristics that seriously constrain development. The Town's zoning and subdivision bylaws shall protect the Town's wetlands, flood hazard areas, riparian areas, important habitat, areas with shallow soil, and other natural areas. Such lands should be kept in active agricultural or forestry use, or in their natural state.

Land uses permitted in these areas must be compatible with the limitations of these areas, such as agriculture, forestry and low-impact outdoor recreation. Uses allowed in such areas are severely limited in order to conserve these important agricultural and natural resources. Development proposals in these areas are reviewed to determine potential impact on sensitive natural resources, access and scenic considerations.

Buffers of land must be retained to minimize the impacts of any development on sensitive resources. This is particularly important along streams and wetlands, where poorly planned development can result in reduced water quality, and increased flood and erosion hazards. The Town's land use regulations will include provisions for creating riparian buffers when development may affect water quality.

Business Planning Area

Character. Route 7 does not have a continuous stretch of development along both sides throughout the whole length of Town. There are still many open areas with farmland and forestland. During planning workshops held in 2008 and October 2015, participants clearly expressed a desire to see a mix of open land, business and residential uses along Route 7 in New Haven.

Protecting the scenic qualities of the Route 7 corridor is critical to maintaining the rural character and quality of life New Haven residents currently enjoy. People's sense of a place is often largely based on the 'view from the road' that they see while traveling on their daily commute or while touring on vacation. Most people's perception of the entire Town of New Haven will be largely based on their experience traveling on Route 7. The residents of New Haven overwhelmingly support preventing the highway corridor from becoming a fully developed commercial strip. Recent survey and forum results express that residents are opposed to further expansion of the commercial zones at this time.

Density and Uses. New Haven Junction is one of the Town's traditional industrial centers. Regarding the New Haven Junction, industrial and commercial development in and about the surrounding wetlands is not recommended. In addition, traffic flow safety through the railroad land easement, together with the significant

incline of Route 7 at its intersection with the railroad tracks, dismisses this area as a viable commercial development site. The Town recognizes that there are significant environmental and development constraints that will limit future development and expansion in this area.

The character of development around the two major intersections at the junction should be carefully considered, as they serve as gateways to New Haven for many travelers. The availability of rail access and the presence of the Town's historic rail station should be recognized and highlighted as important resources in this area.

The area around Campground Road is where much of the commercial and industrial development in Town has occurred in recent decades. The Town's land use regulations should continue to allow for ongoing mineral extraction in this area, along with compatible industrial activities in areas not visible from Route 7, but with access to the rail line. In reviewing industrial uses, the Town should consider the impacts of the proposed use including traffic, noise, light and pollution, and require adequate buffers between industrial and non-industrial uses.

The size, scope and impact of commercial uses along the state highway will be subject to site plan review for consideration of neighboring residences, the visual character of surrounding land

and the transportation function of the highway, and to further comply with the goals in the Town plan for economic Residents are content with the scale and intensity of commercial development currently in New Haven. The Town's zoning regulations will more specifically define the size of commercial buildings to limit impacts to the rural, scenic character of the Route 7 corridor, and to maintain a village scale of development. Limiting the size and scale of commercial buildings would support a diversified economy consisting primarily of small, locally-owned businesses. It has been shown that locally-owned business contribute more to a community's economic vitality by keeping dollars circulating in the local economy.

Access Management. It is recommended that access to all commercial and industrial areas be limited in number, if necessary by use of multi-lot access roads, to promote safety and to ease traffic flow on public roads. The Town's land use regulations will require that commercial or industrial property be of a size that allows ample room to set new development back from the highway and put landscaping in place to reduce the

development to serve the needs of residents and those who travel through Town on the busy highway corridor. impact of higher intensity land uses.

Open Land along the Route 7 Corridor. Lower density areas of land use will separate the commercial and industrial areas from residential and agricultural areas, and they will be maintained as low-density residential or open space/agricultural land. This will ensure that the Town's commercial and industrial areas remain distinct areas and that strip development does not slowly spread out along the entire highway.

Open space and agricultural lands adjacent to Route 7 outside the designated commercial and industrial areas will be considered high priorities for conservation efforts. The financial incentives of conservation (price paid for development rights, income tax benefits and/or reduced property tax burden) should be used to assist landowners who want to keep their land open or in agricultural use. The Town should work with willing landowners, land trusts and other organizations to conserve as much land outside the designated commercial and industrial areas as possible.