Tinmouth

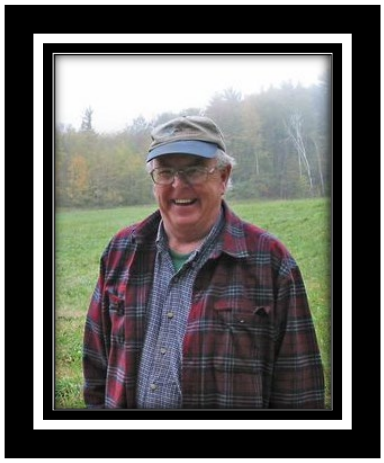
Town Plan

Adopted December 11th, 2025

Dedication

The 2025 Tinmouth Town Plan is dedicated to Robert "Bob" Lloyd. Bob served on the Planning Commission for 26 years, many as vice chair; was the Chair of the Zoning Board of Adjustment for many years; and was a map maker extraordinaire. His countless hours of dedication and service to Tinmouth are greatly appreciated.

Some of his maps are included in this update.



Acknowledgements

Tinmouth Planning Commission
Michael Fallar, Chair (2026)
Larry Carabeau (2026)
Vito Macaluso (2026)
Andy Gilmore (2027)
Ann Lundquist (2027)
Patricia Psholka (2027)
Kim Harbaugh (2028)
Judy Gilmore (2028)
Joe Buffum (2028)

Town Clerk & Treasurer
Gail Fallar (2026)

Tinmouth Select Board
Judy Gilmore (2026)
Kevin Eaton, Chair (2027)
Melody Squier (2028)

Vision

Tinmouth is a friendly, family-centered, civic-minded, rural community that values peace and quiet

Residents of our town gathered for a visioning session to define and focus the direction of the town at the start of the Town Plan update, in 2012. The following vision represents the input from Tinmouth residents, as developed in 2000 and re-validated by surveys in 2006, 2017, and 2023 and open meetings and hearings. It represents a durable vision of the town and its future:

Tinmouth Residents Hope To:

- Maintain the rural aspects of the town including active, productive farms, open meadows, substantial forests, and scenic mountain vistas.
- Balance the needs of residents for housing, safe roads, good schools, public services, and recreational opportunities with clean waters, mixed wildlife habitat, and undeveloped land.
- Promote a small-town, neighborly atmosphere by continuing to improve Tinmouth center and support civic activities and efforts.

Owl at Echo Mountain

Goals

It is the purpose of this Plan to guide future growth and development within the Town of Tinmouth by providing a framework of planning policies and recommendations which will assure that decisions made at the local, regional, and state levels are consistent with the following specific objectives:

1. Preserve the rural character of Tinmouth.
2. Maintain sustainable agriculture as an economic base that minimizes impact on soil, water and air quality.
3. Protect and preserve scenic and historic features, open spaces, fragile and wildlife habitats and other natural resources.
4. Maintain a population consisting of residents and families of all incomes, ages, and types.
5. Allot sufficient space in appropriate locations for agricultural, residential, recreational, and commercial development in order to meet the needs of the town.
6. Prohibit incompatible and uncoordinated development activity.
7. Allow for future growth to occur in a way which will not place an undue burden on the town to provide community facilities and services.
8. Assure that basic needs of health, safety, education, and housing will be met and maintained at satisfying levels in accordance with population growth.
9. Foster local activities, programs, development patterns, and town governance that build the town's strong sense of community.
10. Require that public utilities be located in such a way that they will not have an undue adverse effect on the scenic quality and land values of the town.
11. Require that town highways permit safe and efficient movement of vehicles through the town.

Table of Contents

Chapter I: Introduction

The Tinmouth Planning Commission

The Vermont Planning and Development Act enables the legislative body of all municipalities to create a Town Planning Commission which may consist of not less than three nor more than nine members. Members are appointed by the Tinmouth Selectboard. At least a majority of the Commission must be permanent residents of the community. In accordance with the Act, the Tinmouth Planning Commission is given the authority to prepare a Municipal Development Plan and to recommend this document to the Selectboard and the voters. The Tinmouth Planning Commission was formed in the early 1970's**.** Currently there are nine members serving staggered three-year terms.

The Tinmouth Town Plan

A Municipal Development Plan, once approved by the Tinmouth Planning Commission and adopted by the Select Board, is the official policy of the community with regard to future growth and development. It is intended that the Plan be used in a positive manner as a tool in guiding the direction of growth in a way that is both economically feasible and environmentally acceptable.

The first Tinmouth Town Plan was written in 1973 and has been updated and amended multiple times in the ensuing decades. This most recent version was prepared over the course of many months from August 2022 to July 2025, by the Tinmouth Planning Commission, assisted by the Rutland Regional Planning Commission. Resident input was received through public hearings in the fall of 2024.

The 2025 Tinmouth Town Plan will be implemented through (1) following recommended actions to be completed in the next eight years; (2) changing and adopting zoning and subdivision regulations and other land use controls as recommended, (3) cooperating with other government agencies, and (4) further studies.

Local, Regional, and Statewide Planning in Vermont

The Tinmouth Town Plan is an integral part of the regional and statewide planning process. In adopting the Town Plan, citizens of Tinmouth may anticipate the future with the knowledge that a significant step has been taken in the development and preservation of their community. The Plan was prepared in conformance with the requirements in the Vermont Municipal and Regional Planning and Development Act (Chapter 117 Section 4382. The plan for a municipality.) As well, the Tinmouth Town Plan is consistent with the Rutland Regional Plan, readopted in June 2018,

Scenic View

and is also compatible with approved plans from surrounding communities. Under the authority of the Select board, the Tinmouth Planning Commission prepared this Town Plan. It will be submitted to the Rutland Regional Planning Commission for Regional Approval after adoption.

In terms of its significance in relation to State land use controls and growth policy, the Town Plan plays a key role. Vermont's Act 250 includes a provision for a review procedure through which all applications for subdivision and development must pass. During the review process, the feasibility of each project is weighed against ten criteria, guidelines set forth as environmental and economic safeguards. The tenth criterion requires that any subdivision or development must be in conformance with a duly adopted development plan, land use or land capability plan which exists on the state level. The tenth criterion ensures that the proposed development is in compliance with the policies set forth in the regional plan and the more detailed local town plan. In this way planning and development at the three levels of government, state, regional and local, are integrated to form a consistent approach to the problems caused by rapid growth. Similarly, Section 248 regulates utilities and companies for projects including electric generation and transmission facilities.

Continued Maintenance of the Plan

Because planning is a flexible, continuing process, the Tinmouth Town Plan will be reviewed and amended from time to time in light of new developments and changed conditions affecting the municipality. In accordance with Section 4387 of the Act, the Plan shall expire and have no further force and effect eight years from the date of its adoption, unless it is readopted by the Select board. The Plan may be readopted in the form as expired or about to expire, and shall remain in effect for the next ensuing eight years or until amended. The Tinmouth Planning Commission should review the Plan on a regular basis to ensure it remains a current vital document.

Implementation of the Plan

Land Use Bylaws

As a policy document, the Plan provides the legal as well as the conceptual basis of all land use control. The specific controls are accomplished by the enactment of bylaws. Since the bylaws are intended to implement the Plan, their content must reflect the findings, recommendations, and policy statements embodied in the Plan. Zoning and Subdivision Regulations were revised in 2022 to ensure compatibility with the Town Plan.

Permanent zoning regulations, first adopted in 1977 and last amended in 2022, allow the town to permit, prohibit, restrict, regulate and determine land development, including, without limitation, the following:

1. Specific uses of land, water courses, and other bodies of water.
2. Dimensions, location, erection, construction, repair, maintenance, alteration, razing, removal, and use of structures.
3. Areas and dimensions of land and bodies of water to be occupied by uses and structures, as well as areas, yards, and other open spaces and distances to be left unoccupied by uses and structures.
4. Density of population and intensity of use.

Zoning and subdivision regulations apply to all lands and uses of land within the municipality except as specifically exempted. A zoning map depicts the separate districts and their corresponding use classifications. All provisions for each class of uses or structures within each district are uniform in nature. The regulations are developed and revised by the Planning Commission and adopted by the town's voters. The laws are enforced by the zoning administrator. Permits requiring board approval are reviewed by the Planning Commission or Zoning Board of Adjustment. Decisions by these boards may only be issued following a public hearing.

Town Fun Day, 2021

Capital Budget and Program

Expenditures of public funds will be required to implement some of the recommendations contained in the Plan.

The Town has several capital accounts: the Equipment Fund, the Capital Building and Repairs Fund, and the Road Construction and Paving Fund. The Selectboard administers these funds.

Non-Regulatory Implementation Tools

Use of the town plan is not limited to regulations and adopted capital budgets. A wide range of projects, sponsored by the town itself or groups serving the town, can implement the goals of the Plan and ensure that Tinmouth's future is being coordinated. Examples could include:

- Working with non-profit housing agencies to build affordable housing in the town.
- Providing residents with information brochures on water quality issues identified in the Plan.
- Establishing a working group in town to help landowners maintain historic structures.

Relationship Between Plan and Plans for Surrounding Areas

The relationship between this Plan and the development trends and plans for the surrounding area has been considered. For purposes of this Plan, the surrounding area includes the Towns of Wallingford, Clarendon, Ira, Middletown Springs, Wells, Danby and Pawlet and the Rutland Region as a whole.

This Plan promotes residential, agricultural, conservation and small- scale commercial activities

at levels consistent with the community's place at the rural, agricultural edge of the Rutland Region and the Town's rich endowment of natural resources. This Plan recognizes the need to accommodate some population and housing growth within the Town, although the amount is relatively small given Tinmouth's unsuitable soils, varied topography and land cover, and its distance from job centers.

Review of the land use plans of surrounding communities suggests that the future land use pattern promoted by this Plan is generally compatible with those of our neighbors. Surrounding communities promote low-density land development and continuation of resource-based uses (such as agriculture) in outlying areas and higher density and commercial uses in existing built-up areas. Sensitive areas are also identified and targeted for conservation, as they are in Tinmouth. Policy statements in the Plan are also generally compatible with those of surrounding communities' plans. Tinmouth has a long history of cooperation with its neighbors. Students were formerly tuitioned to Mill River and West Rutland schools. The town school district merged with Clarendon, Shrewsbury, and Wallingford in the Mill River Unified Union School District, with a single Board, budget, and tax rate, in 2016. The Fire Department has mutual aid agreements with surrounding communities; the Wallingford Rescue Squad, Poultney Rescue Squad and Middletown Springs First Response cover us for emergency care. Tinmouth is a member of the nine-town Solid Waste Alliance Communities.

Chapter II: Who and What Makes up our Town?

Two critical components make up the Town of Tinmouth: its people and its landscape. The way in which we interact with one another, and with the land, is our community. Below is a short description of the basic parts that make up this town: the people we call neighbors and the land we have the ability and responsibility to manage. The rest of this plan will focus on how we have chosen—and are choosing—to provide for ourselves and our neighbors and make use of our land.

Data Disclaimer

This section includes demographic, economic, and housing data sourced primarily from the U.S. Census Bureau and the American Community Survey (ACS). While these sources provide insight, some ACS estimates may not fully reflect local conditions due to small sample sizes and statistical margins of error. The Tinmouth Planning Commission recognizes these limitations and encourages readers to interpret ACS data with caution. Wherever possible, locally verified data and town records have been used to supplement or clarify federal data.

Who We Are

The population of Tinmouth has fluctuated over the past century. From 1900 to 1960, the town experienced a general decline in population. In more recent decades, the population increased from 268 in 1970 to 613 in 2010, before declining again to 553 in 2020. Between 1990 and 2010, the town had the 2nd highest percentage change in population (35%) and ranked 6th in absolute growth [Source: US Census].

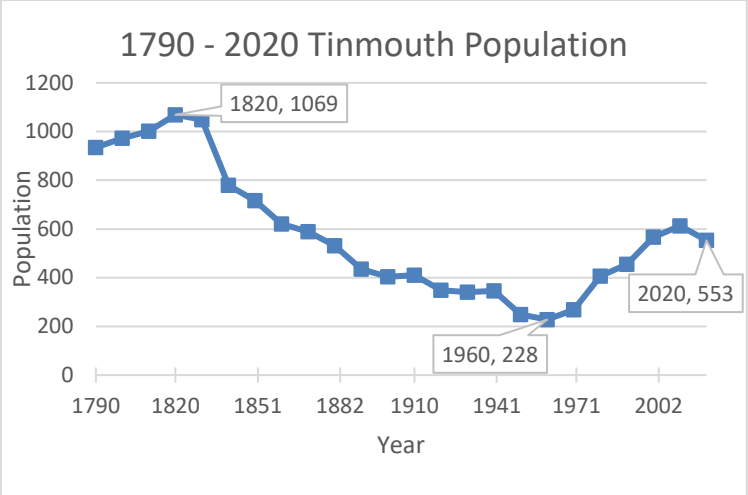
According to the 2020 census, the median age of Tinmouth residents was 47.6 years old. This represents a slight increase from 2010 when the average age was 44, suggesting a shift toward an aging population. The number of children under 18 increased from 108 in 2010 to 117 in 2020, and they now make up approximately 21% of the town's population. During the same period, the number of residents aged 65 and older also increased from 90 to 121, now representing about 21.8% of the population. These changes reflect a growing population at both ends of the age spectrum.

Echo Mountain Bicentennial Farm

According to the 2017-2022 American Community Survey (ACS) 5-Year estimates, 70% of Tinmouth households were classified as family households. At the same time, the average household size is reported as 3.17 persons per household, increasing from approximately 2.6 in 1990. This trend reflects a gradual shift toward more crowded households over time.

According to the 2022 ACS 5-year estimate, approximately 1.6% of Tinmouth residents had moved into their current homes within the past year. This compares to an 8.9% for Rutland County and 12.2% for the State of Vermont. These figures suggest that Tinmouth has a relatively lower rate of residential mobility compared to the rest of the State and County.

Population Analysis



Many factors continue to influence population change in Tinmouth, including economic conditions, commuting patterns, housing availability, and broader demographic shifts. As the town's population evolves, the need for a wider range of housing options, particularly for smaller households, older adults, and non-family residents, has become more apparent. While growth has slowed since 2010, the town continues to experience demographic shifts, including a rising median age and increases in both children under 18 and residents over 65. These trends suggest a growing need for age-inclusive services and housing. Seasonal homes remain a notable part of the housing landscape, especially around Tinmouth Pond, though new construction has become more dispersed across the town.

Our Work

Many residents are employed in towns throughout the Region. According to the 2022 ACS 5-year estimates, Tinmouth has an estimated labor force participation rate of 59%. Of the 347 employed residents, 73% (256 people) of the population work within Rutland County, 23% (82 people) work outside the County, and 2% (9 people) work outside of Vermont. The average commute time is 30.2 minutes, and 80% of workers drive alone, while 11% carpool. Approximately 8.4% of residents work from home.

As of 2022, the leading employment sector for Tinmouth residents is health care and social assistance, employing 164 people (47% of workforce). Other sectors include manufacturing (36 people), construction (27 people), and management (28 people), all of which represent 8-10% of the workforce. Agriculture, forestry, and related industries employed 12 residents, representing 3.5% of Tinmouth's workforce. Health care and social assistance workers earned a median income of $63,750 which is nearly $24,000 higher than the average income across all other sectors combined.

Our Community

When people speak of "community" in Tinmouth, it means much more than just the sum of the people who live in the Town. The term "community" refers to the shared relationships, values, and responsibilities that connect residents to one another and to the land. It reflects how individuals respect one another, interact, and relate to the land and to shared values.

Respect

Tinmouth strives to be a community that is open to diverse ideas, perspectives, and lifestyles. We welcome all residents regardless of age, race, gender, income, ability, or background, and affirm our commitment to inclusion, equity, and mutual respect. We have a long history of making our living off the land through agriculture and forestry, but recognize that this is broadening to include commuters, retirees, and seasonal residents. Though new ideas and change bring out differences of opinion, we work hard to resolve the issues and move ahead together as neighbors.

Interacting with Each Other

Tinmouth Community Pizza Oven

The easiest way to quantify the notion of "community" in Tinmouth is by listing all of the different ways in which we come together for everyday events and special occasions. The *Tales of Tinmouth* is a testament to this, with residents from throughout the community putting it together monthly and announcing all of the issues and events going on in town. While these events are not the only way residents connect with one another or with the town, they help to illustrate the strong sense of shared purpose and mutual support. Below is a sampling of the kinds of events that Tinmouth residents have come together to do over the years.

Large groups of coordinated volunteers have:

- Brought in the whole first cut of hay for a farmer who was injured in a tractor accident.
- Rebuilt a couple of homes after house fires.
- Built two additions to the school, renovated the firehouse, and built the community center.
- Raised the funds and built a barn for a dairy farmer who lost his to a fire.
- Arranged for months' worth of meals for the sick or injured.
- Organized and participated in weekly softball, volleyball, basketball games, and pickleball.
- Hosted annual Tinmouth Community Day parade, races, games, and exhibits.
- Held monthly contra dances.
- Staged regular concerts at the Old Firehouse.
- Created the Tinmouth Handbell Ensemble, with bells and other equipment paid for with donations.
- Pooled garden flowers to decorate Tinmouth family weddings.
- Created and maintained gardens at the school, town office, community center, church and welcome triangle.
- Built a community pizza oven near the town office.
- Playgrounds – big and small, including a large playground near the Community Center.
- Rebuilt a sugar house after it was destroyed by a fire
- Organized storytelling events at the Old Firehouse
- Created a program to help families in need with holiday gifts and winter clothing for children
- Expanded the Tinmouth Community Fund grant program in 2025 to support local committees, nonprofits, and small businesses with awards of up to $1,200.
- The Tinmouth Plant sale continues to support community grants and scholarships through annual fundraising/events

The Anne and Roy Wilbur Fund is supported annually with donations of money and food to

provide holiday food baskets and help with fuel, electricity, etc. It was created by members of the Tinmouth Community Church.

The Tinmouth Community Fund, established with funds left over from completion of the Community Center and held by the Vermont Community Trust, annually awards small grants for projects within the town.

Tinmouth Community Scholarship Fund, begun with local contributions, provides scholarships for post-secondary education and camp attendance. It was expanded in 2016 when the Town Meeting voted to give it a large amount from the former School Tax Stabilization Fund when the school district merged into the Mill River Unified Union School District.

The Town has a website—tinmouthvt.gov—that includes much information about the town; and the town participates in Front Porch Forum, an online e-newsletter and bulletin board.

Our Land

Bedrock Geology

The geologic formations underlying the town of Tinmouth are composed of bedrock units running in a north-south direction. These rocks were originally sedimentary (shale, limestone, dolostone, sandstone), deposited in a marine environment during the Cambrian to early Ordovician period (540 - 480 million years ago). Some of the rock units were metamorphosed into schist, marble, quartzite, and other metamorphic rocks during the mid-Ordovician period (about 470 - 440 million years ago). Folding and faulting also took place at this time, resulting in the town's existing geologic structure.

Tinmouth Valley is chiefly underlain by carbonate rocks (e.g. marble, dolostone and limestone). These formations are relatively soft in comparison to those of the highlands flanking the valley, and therefore are more susceptible to erosion. A band of Shelburne Marble, of economic importance elsewhere in Vermont, underlies the lower eastern slope of Tinmouth Mountain. In the early 19th Century marble was quarried in Tinmouth for gravestones.

Surface Geology

Overlying the bedrock formations are surficial materials of varying depth and composition. Their deposition is primarily the result of glacial activity approximately 40,000 - 10,000 years ago. Unsorted unconsolidated glacial material, known as till, was laid down directly by glacial ice and now mantles most of the town. A moraine along the eastern slopes of Tinmouth Mountain marks an extensive buildup of till when the glacial front probably was temporarily stabilized. Glacial melt waters deposited sands and gravels, forming kame moraines and kame terraces along the lower slopes of the valleys. On the floor of Tinmouth Valley, a sinuous esker was formed by the subglacial deposition of sand and gravel along a melt water channel. The bedrock of the mountains and valleys was modified by the action of the moving ice.

At one point, Tinmouth Valley was dammed by ice, which created a high-level lake of substantial size. Surface deposits related to lake sediments are therefore found along the sides of the valley floor. They consist of horizontally bedded gravel, sands and clays.

Soils

Detailed information about soil classifications for individual sites can be found in the Soil Survey of Rutland County, Vermont.

“Prime” and “Statewide” agricultural soils, the Dutchess—Bomoseen—Pittstown and Georgia

and Amenia soil associations with 3-8% slopes and minimal stoniness, exist in pockets surrounding the Channel alley and extend up Harrington Crossroad into the northern Gulf valley. The largest occurrence bounds East Road, starting south of Channel Road and extending north along North East Road.

Lower slopes of the Clark and Tinmouth Mountains have mixed soil types of the Paxton – Georgia – Amenia Association with seasonal high-water tables, limiting agricultural activities and septic development. Higher elevation areas on both mountains have much shallower soils with heavier rock content. The Tinmouth Channel wetland area is generally covered with the high organic matter Pinnebog muck soil. Remaining valley areas in the northwest and southwest sections of the town have the deep soils of the Dutchess—Bomoseen—Pittstown Association.

Topography

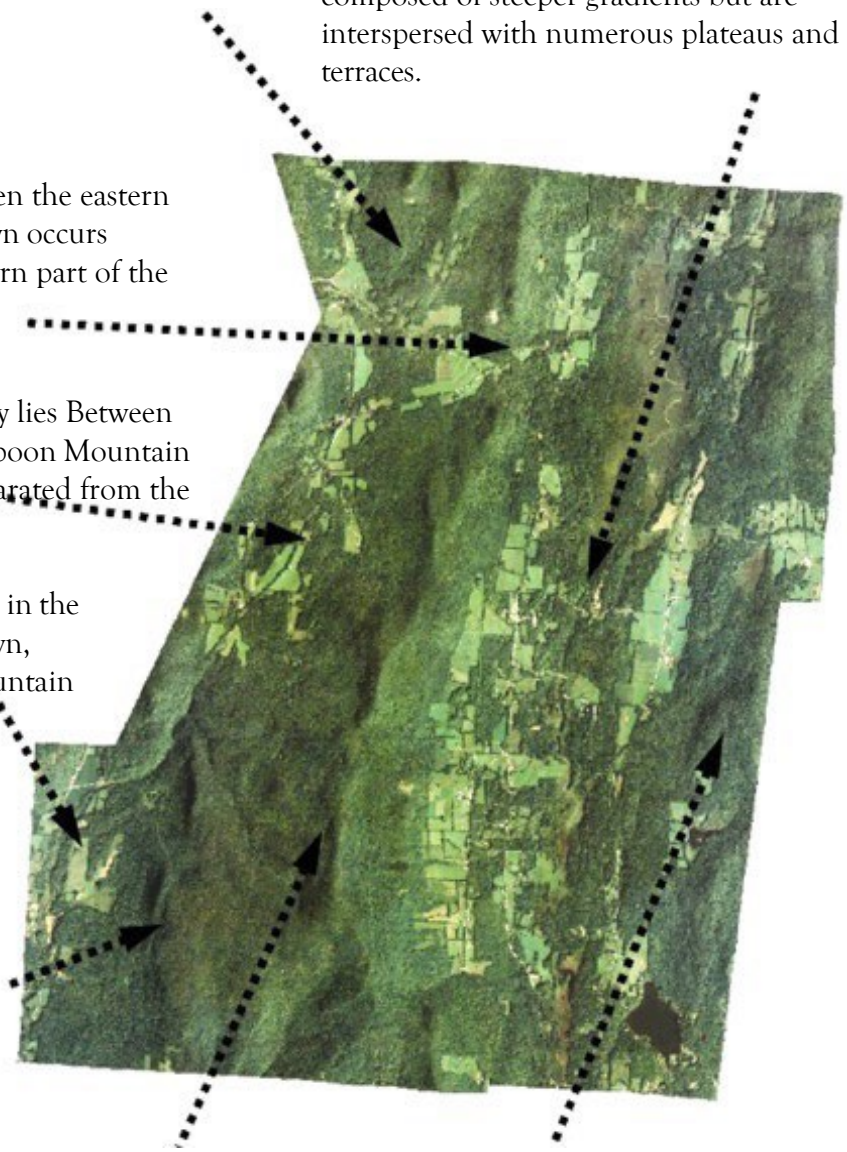
Northwestern Tinmouth has a narrow valley with gentle slopes, bordered by mountainous terrain to its east and west.

Tinmouth Valley, broad and U-shaped in cross-section, has elevations ranging from 1000 to 1500 feet. The valley floor has flat to undulating land with slopes generally less than 10 percent in steepness. The lower slopes on either side of the valley are composed of steeper gradients but are interspersed with numerous plateaus and terraces.

The only connection between the eastern and western parts of the town occurs through a gap in the northern part of the ridge.

An undulating upland valley lies Between Tinmouth Mountain and Spoon Mountain in the west-central area, separated from the eastern half of the town.

Narrow lowland Valley rests in the Southwest corner of the town, bordered by Tinmouth Mountain and mountains in the town of Wells.



The Gulf is a narrow and steep-sloped ravine through which the headwaters of Wells Brook cascade.

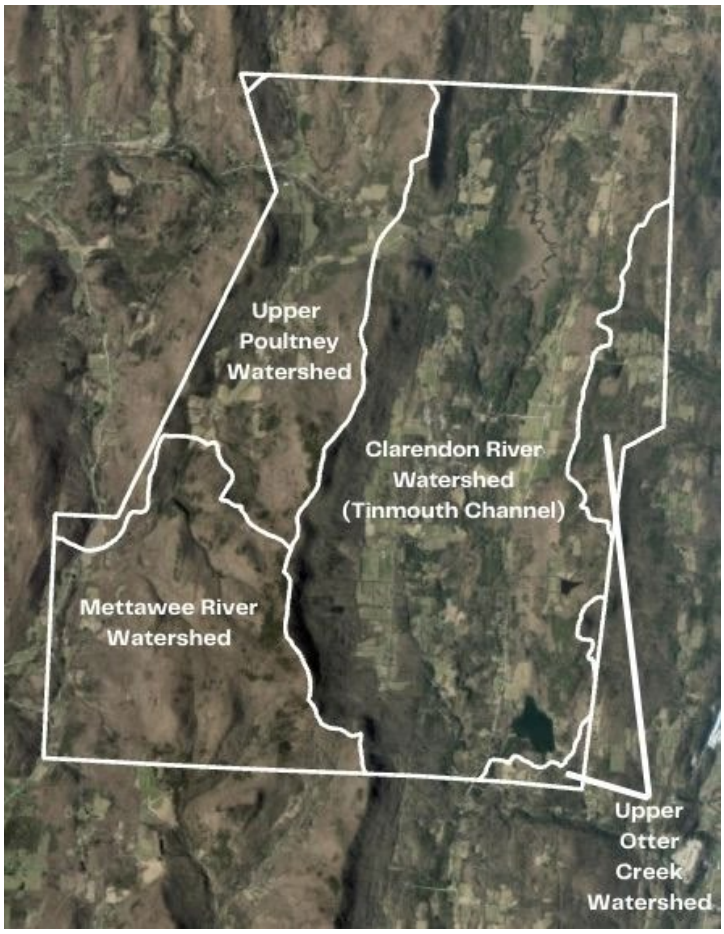
Tinmouth Mountain has elevations that range over 2000 feet with one summit climbing to a height of over 2000 feet with one summit climbing to 2835 feet. The slope forming walls of this mountain ridge is generally steeper than 20 percent, with the upper east-facing slopes becoming precipitous at higher elevations.

Clark Mountain borders the eastern side of Tinmouth Valley. Its elevations reach a summit of1965 feet above sea level. The slopes are steep along this ridge, but they are not as extensive as those on Tinmouth Mountain.

Watersheds

Surface water drains in two key directions: westward, into the Poultney-Mettowee Watershed and eastward, into the Otter Creek Watershed. Both eventually lead into Lake Champlain and the Great Lakes watershed that drains via the St Lawrence River. Five sub-watersheds direct water into these two. See watershed map at right.

1. The Tinmouth Channel flows north, becoming the Clarendon River, a major tributary of Otter Creek.
2. The east slopes of Clark Mountain drain into the Valley of Vermont and the Otter Creek.
3. The southwest corner of Tinmouth drains westward through the Wells Brook into the Mettowee River.
4. The south end of Tinmouth Mountain drains towards Flower Brook, which flows westward and joins the Mettowee River.
5. The northwest section is drained by the headwaters of the Poultney River.



Streams and Rivers

Tinmouth serves as the headwaters for a series of streams and rivers that serve the two watersheds described above. The three largest bodies of flowing water are the Tinmouth Channel, the Poultney River, and the Wells Brook.

Chipman Lake

Chipman Lake, in the southeast corner of the town, known also as Tinmouth Pond, is the only significant water body. It is approximately 79 acres in surface area, has an average depth of seven feet, and drains into the Tinmouth Channel. In recent years, lake residents have been grappling with an invasion of Eurasian milfoil.

According to the Vermont Department of Environmental Conservation, the lake is in a mesotrophic state, meaning that it has moderate nutrient concentrations. "Mesotrophic lakes have moderate algae growth and relatively clear water. Often these lakes support plant growth around much of their shoreline and may have some shallow areas with abundant plant growth." [3]

"Trophic state is a classification of the degree of nutrient enrichment of a lake. As a lake ages it progresses naturally from an oligotrophic state, through mesotrophic, to a eutrophic state The

addition of cultural sources of nutrients, however, can greatly accelerate this process and result in premature eutrophication and associated water quality problems." (Cultural sources of nutrients would be septic discharge, as well as agricultural, lawn, and stormwater runoff). [4]

There are no other significant lakes or ponds within Tinmouth's borders, though numerous wetlands stretch across the town.

Kayaking the Tinmouth Channel

Wetlands

Wetlands are Vermont's most productive ecosystems and serve a variety of beneficial functions: protecting water quality and quantity, retaining storm water runoff and reducing flooding, providing crucial habitat for fish, mammals, reptiles, amphibians, birds, insects and plants, serving as valuable resources for education, research and recreation, and contributing to the open space character of the landscape.

The Tinmouth Channel Wetland is one of eleven Class I wetlands in the state of Vermont. Class I wetlands are considered "exceptional or irreplaceable in their contribution to Vermont's natural heritage and are therefore so significant that they merit the highest level of protection" according to the 2002 update for Water resources Board's Vermont Wetland Rules. The extensive and diverse wetland habitats range from open fens to shrubby and wooded swamps and represent numerous state significant natural communities due to the limey (calcareous) bedrock.

At the southern end tamarack swamps and a rare open calcareous peat landform the headwaters. The waterway eventually broadens so that the northern end is navigable by canoe. Historically this end was straightened or channelized, likely so that iron ore could be transported from Clark Mountain to early iron furnaces downstream. Early surveys showed the wetlands subdivided into hay lots for nearby farmers, though these earlier agricultural disturbances are no longer evident.

Class II wetlands, also considered "significant," and any wetlands contiguous to mapped Class I and II wetlands are regulated as well and mapped by the State of Vermont and included in this Plan's Natural Resource maps.

Class III wetlands, although greater in number, are not protected by the Vermont Wetland Rules of 2025 because of their small size or intermittent nature, but may have local significance and may be protected by other federal, state or local regulations.

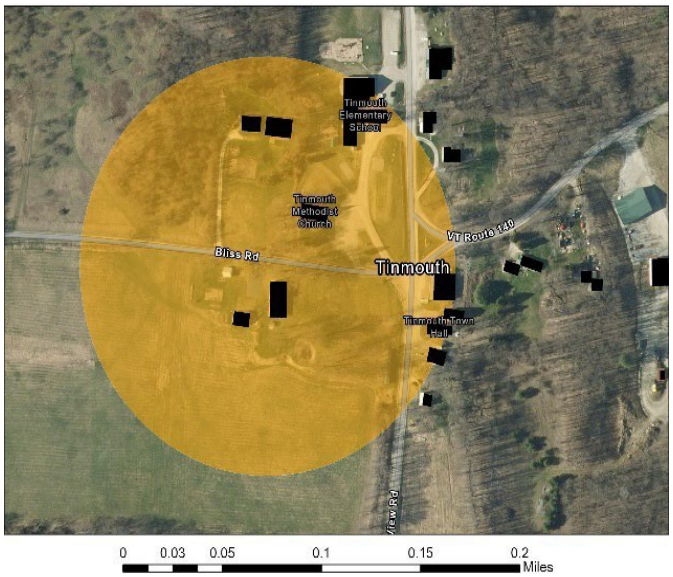
Ground Water

Groundwater resources have not been reliably mapped in Tinmouth. In general, the occurrence of groundwater is controlled by the existence and permeability of fractures and pore spaces in sediment and bedrock. The deep deposits of glacial sands and grounds in Tinmouth valley—and to a lesser extent along the narrow valleys of Wells Brook and the Poultney River—have

the greatest potential for shallow groundwater storage. The groundwater supply is sustained by the infiltration of precipitation and surface water through soil and rock material. The permeable sand and gravel deposits of the valleys allow direct recharge from the surface. The upland hills and mountains covered with thin soils are also important recharge areas. Because the bedrock is highly fractured in most parts of town, it is the primary aquifer for many Tinmouth residents. Bedrock well depth varies depending on the density of water-bearing fractures. Three major groundwater sources emerge at the Hepburn, Merrill, and Wright springs on the east side of Tinmouth Mountain.

The Vermont Department of Environmental Conservation maps one Groundwater Source Water Protection Area (SPA) in Tinmouth for the Tinmouth Central School's Non-Transient Non Community (NTNC) Water System. The town well, located on land owned by the Tinmouth Volunteer Fire Department, provides drinking water to the school, the fire department, the town office, and the community center. A formal agreement between the Town of Tinmouth, the Mill River Unified Union School District, and the Tinmouth Volunteer Fire Department governs shared use and responsibilities for this water system. Designation of a mapped SPA means that development activities within this area are subject to strict state oversight and land use restrictions to prevent contamination of a shared public water supply

Groundwater Source Protection Area (SPA)
Tinmouth Central School Non-Transient Non-Community System

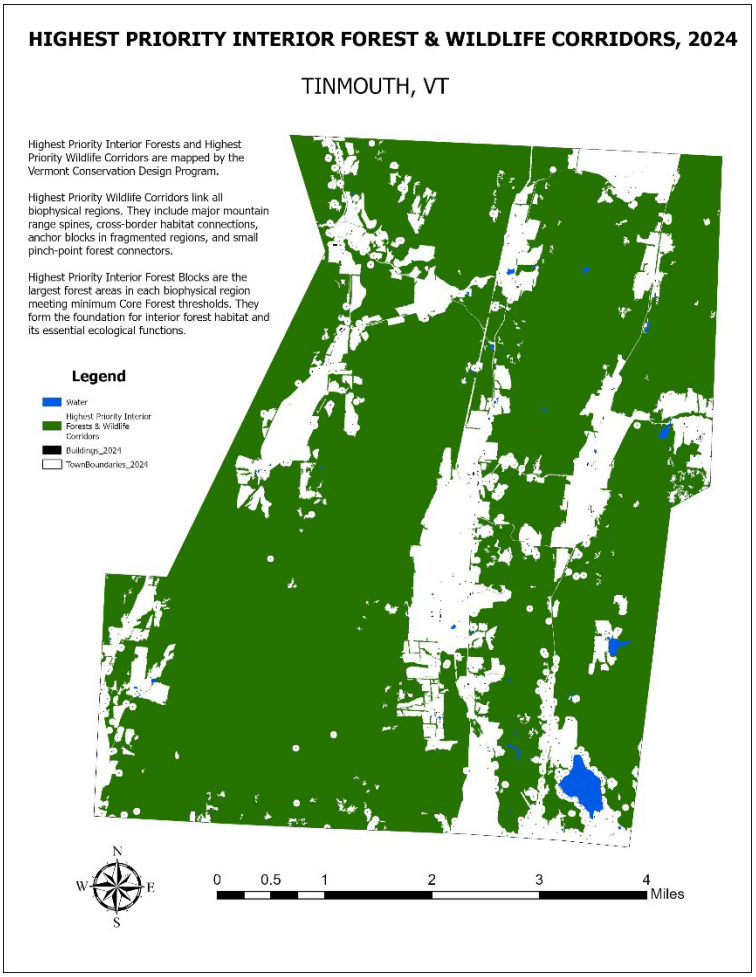


Vegetation

The composition and extent of vegetation which existed when the town was first settled was quite different from that which exists now. Early settlers modified the forest by clearing trees to open fields for crops and pasture land or to harvest products for industry (charcoal, potash, cedar oil). Successive cuttings for timber followed this activity. In the past eighty years, there has been extensive re-growth of forests as farms have shrunk or disappeared on the town's more marginal agricultural lands.

Most of the town is covered with a relatively young northern hardwood forest. The trees commonly comprising this forest are beech, birch, and maple in association with hemlock, white pine, and some spruce. The Tinmouth Channel is covered with various species of wet-tolerant plants. Typical are red maple, larch, white cedar, willow, alder, sweet gale, black ash, and sedges.

Approximately one-quarter of the town is in open fields. These are predominantly used for pasture or cropland to support the dairy industry. Adjacent to these open fields are numerous 'old field' upland areas. They are in vegetative transition with many pioneer species.



Connectivity

- Allows animals to move freely across their range.
- Allows plants and animals to colonize new habitat as climate change, succession, or other ecological processes force them to migrate.
- Reduces the risk of population isolation and provides for the exchange of genetic information among populations of animals and plants.
- Allows animals to access suitable habitat to meet their daily and annual life needs.
- Allows seasonal movements(migrations) to essential range or habitat; allows young adult animals to access new range, away from natal range; and allows adult animals to interact with potential mates, thus improving reproductive success and genetic fitness.

Wildlife

Tinmouth is a unique network of ecological communities supporting a variety of animal, plant, and insect life: from its small vernal pools in the forested uplands down through the pasture grasslands and woodland edges to the varied swamps, fens and rare plant communities in its wetlands.

Intercontinental migrating waterfowl visit our extensive wetlands. Neo-tropical migrants (our common summer songbirds) breed and nest in our older growth forests (providing interior forest conditions), woodland edges and brushy pastures. Moose, bear, coyotes and bobcat have smaller seasonal migrations following corridors connecting the Tinmouth Channel with the large forested blocks on the Tinmouth Mountain and Spoon Mountain ridges that run north through Ira and south through Danby, and on Clark Mountain, that is contiguous with major forest blocks in Clarendon and Wallingford. Deer rely on the Tinmouth Channel for winter cover and move through the fields, woodland edges and upland forests as their diet changes through the seasons. More localized still are the diverse amphibians relying on the brief appearance of woodland vernal pools, Tinmouth's many species of dragonflies needing pristine wetland habitats, butterflies requiring specific host plants and fish spawning in Tinmouth's brooks.

Tinmouth Visitor

Tinmouth Visitor, Part 2

The town is situated at the crossroads of two critical wildlife migration corridors in the Rutland Region. In part because development is concentrated along the Route 30 and Route 7 corridors, the upland plateaus and mountains of the Taconic Mountains provide excellent connectivity for wildlife in a north-south direction. In addition, Tinmouth is critical for east-west movement of wide-ranging mammal species and is central to one of the few networks of forested habitat connecting the Green Mountains and the Adirondacks.

Contiguous forest habitat provides a significant contribution to the local community's interest in its natural heritage, identity, and working landscape.

These lands provide many ecological functions for fish, wildlife, plants, and all the natural processes that sustain them. Further, they provide extremely valuable connections for people to enjoy and appreciate the land and its abundant resources. To this end, we will work to inform landowners of these values and offer assistance for any conservation actions that are kin keeping with the local community's conservation interests. See the Wildlife Habitat Suitability Analysis.

Climate

The average annual precipitation in Tinmouth is approximately 43.9" inches per year (1991-2020). Evaporation and the transpiration of plants return a large percentage of this amount directly to the atmosphere. The remaining water forms surface water or it replenishes the ground water supplies underlying the valley floors. The temperature ranges from a mean January low temperature of 8.0 degrees F to a 80.3 degree F high in July. The annual chance of sunshine in Tinmouth is 45% and the mean length of growing season is 135-145 days.

Chapter III: How We Use the Land

This chapter of the Plan is organized to cover the ways in which landowners, residents, and visitors use the land in Tinmouth; the challenges we face with the ways we currently use the land and water; and ways in which we can solve the problems we have today. How we would like to see the land and water used in the future is addressed in Chapter 5: "Making Good Decisions about the Future."

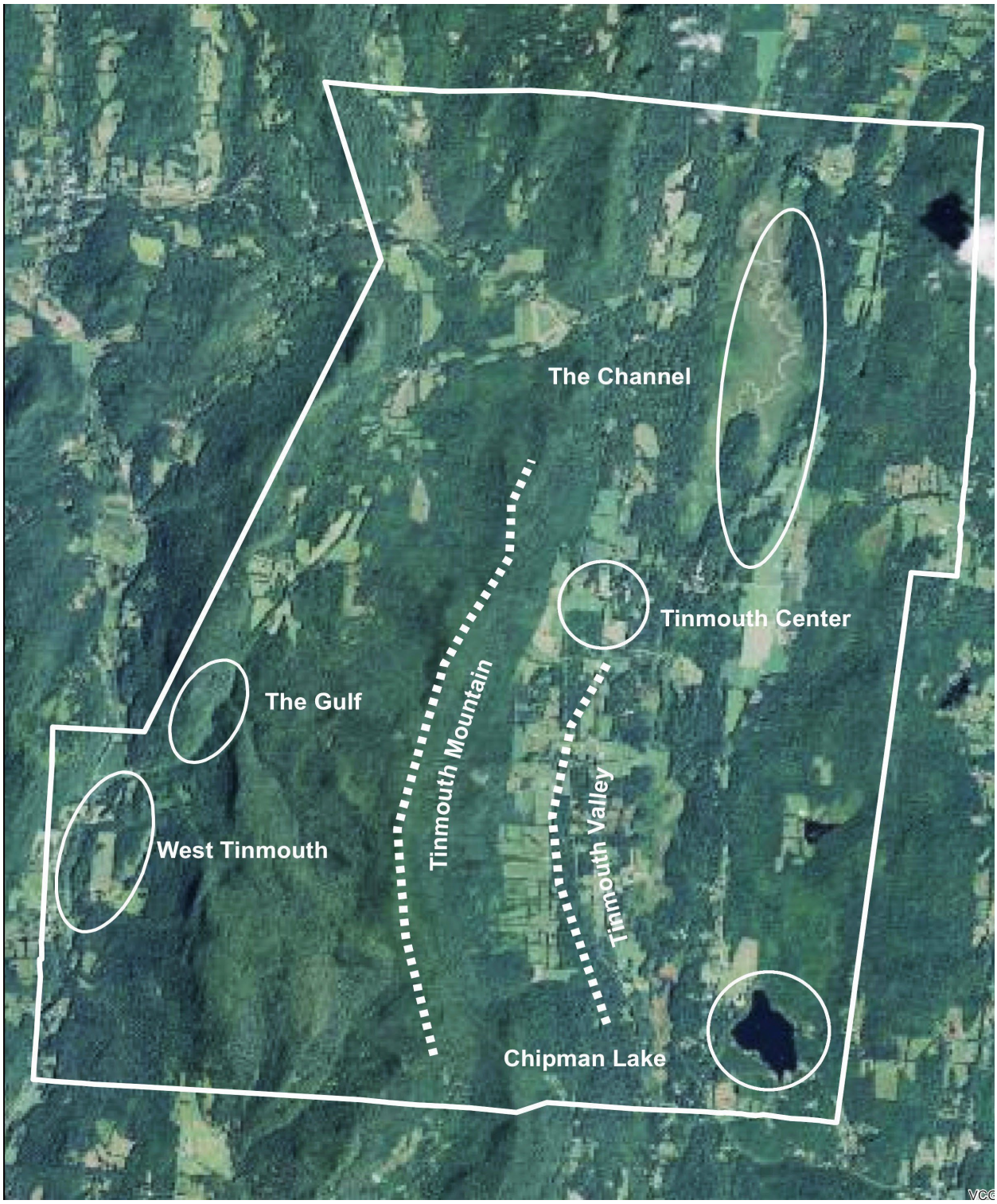
Historic and Current Settlement Patterns

Present land use in Tinmouth is rural-residential in character and is related to agriculture. The density of settlement is very low, and its distribution has been influenced by the physical composition of the land. Tinmouth Valley contains the major concentration of settlement. At its center is a small hamlet, which serves as the focus of community activity. It contains the town's community facilities, the town office, school, firehouse, and community church. A National Historic District, it has only a few houses, many of them historic, and around 20 inhabitants.

The southern portion of the valley has a relatively high proportion of settlement, mostly occurring along town roads.

This area is also the location of a major concentration of seasonal dwellings which ring the shoreline of Tinmouth Pond (Chipman Lake). Other concentrations of settlement occur in the valleys in the West Tinmouth area and are quite remote from the eastern portion of the town.

Settlement and Land Features of Tinmouth



Settlement Pattern Analysis

Tinmouth remains a community founded upon farming, even though for a long time the majority of its residents have worked outside the town. As development slowly takes place,

however, it is possible that the town's agricultural character and landscape may continue to wane. Although the number of working farms has declined in Tinmouth, those that remain have taken over land from abandoned farms. Dairy farming is no longer dominant in Tinmouth as in the rest of Vermont. However, several farms continue to operate, including beef, vegetables, maple, and diversified agricultural operations. Despite these changes, farming remains a vital part of Tinmouth's identity and heritage, and its continued presence helps preserve Tinmouth's rural character.

Despite the diminishing number of farms, Tinmouth has a considerable amount of undeveloped open land and forest areas. Preserving these spaces and encouraging working use of the landscape is vital to maintaining the rural character valued by Tinmouth residents.

Land Ownership

There were 452 parcels in town in 2025. The majority of land in town is owned and managed by individuals or small businesses. Approximately 48% of all private parcels are over 10 acres in size. The largest category of parcels includes those under two acres. About 200 parcels lie between 2 and 25 acres in size, about 40% of the parcels, but only 11% of the land. Approximately 350 of all parcels in town have at least one home or other principal structure on them.

Tinmouth Acreage Distribution Across Parcels				
Acreages	Number of Parcels	% of Total Parcels	Total acres in Category	% of Total Acreage
0 to 1.99 [1]	136	33%	110.28	0.6%
2 – 9.99	93	20.4%	496.26	2.7%
10 – 24.99	92	20.2%	1,378.5	7.5%
25 - 49.99	46	10.1%	1,690.96	9.2%
50 – 99.99	32	7%	2,573.2	14%
100 – 249.99	27	5.9%	4,889.08	26.6%
250 – 1200[2]	15	3.5%	7,260.1	39.5%
Totals	452[1]	%	18,380[2]	%

[1]Excludes both roads and water

[2]Includes large Tinmouth Channel Parcel. Acreages do not include roads.

Publicly Owned Land

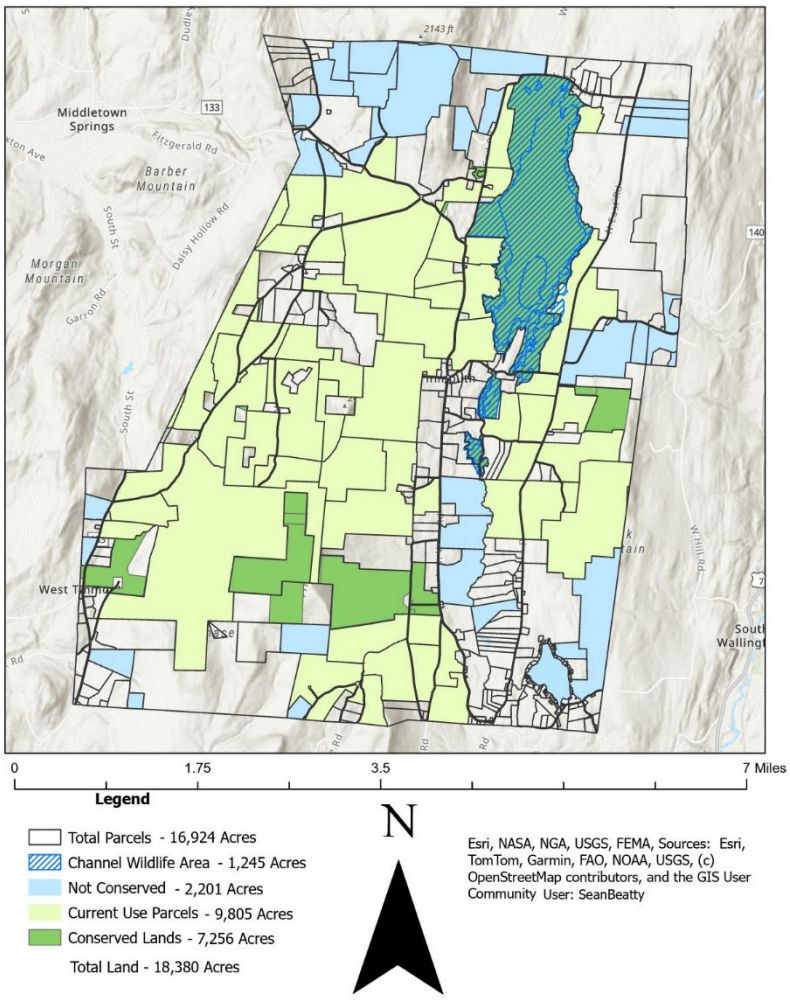
The town owns several parcels of land on which the municipal buildings reside: town office, Old Firehouse, creamery, town garage, and transfer station.

In addition:

- A tract of land, consisting of 1,256 acres that includes almost all of the Tinmouth Channel wetland, which is owned by the State of Vermont.
- The 260-acre Tinmouth Purchase Recreation Area, owned by the town, includes a small cabin.
- Several old cemeteries for which the town is responsible for maintenance.
- The town green includes the church, the school and the community center.

Restricted Land

Tinmouth Lands Conserved and Enrolled in the Use Value Program



Several organizations associated with the Town have been active in conserving land in Tinmouth in perpetuity. The Selectboard worked with the Vermont Land Trust and the Vermont Housing and Conservation Board to buy land for the Tinmouth Purchase Recreation area in 1997, and with the State of Vermont to designate the Tinmouth Channel a Class I wetland in 2003. The Tinmouth Land Trust has worked with landowners to broker the donation or sale of development rights to the Vermont Land Trust. Most of the Vermont Land Trust projects have also incorporated and set aside land for future residences, approximately 25 total. A few of these have been designated specifically for affordable housing. Future conservation work should pay close attention to supporting farming and forestry in the town and conserving the town's natural heritage while ensuring that economic opportunity and the ability for new housing to be built at an affordable cost is not lost.

Most of the conserved land is also in Vermont's Current Use program, which like the conservation easements, prohibits subdivision and prescribes good forestry and farm management practices. It should be noted that these lands are conserved due to private landowner initiatives. Tinmouth has a strong legacy of land conservation, with significant acreage already protected through local, state, and private efforts. Continuing this tradition will be essential to preserving the town's rural character, ecological integrity, and long-term land use goals.

Restricted Land Acreage	
Total town parcels acreage	16,924 (does not include roads or Wetlands)
Total land in town	18,380
Total conserved land	7,256 (excluding channel)
Tinmouth Channel	1,256
Total in Current Use, not conserved	2,201(excludes unmarked parcels)

As of the most recent data, approximately 8,512 acres representing 46% of Tinmouth's total land area are either conserved, enrolled in the Current Use Program, or publicly protected (including the Tinmouth Channel).

Current Uses of Land, Analysis, and Solutions

Homes and Homesteads

Tinmouth's year round and seasonal residents live, for the most part, in widely dispersed, single-family housing along the major roads in town. There is a slight, but by no means large, concentration of housing at the junction of Route 140 and Mountain View Road near the town center and another along the southern portion of East Road. The highest density of residential development is the largely seasonal housing surrounding Chipman Lake in the southeast corner of Tinmouth.

Kayaking the Tinmouth Channel

Tinmouth has a sizeable but declining number of seasonal housing units. On the 2024 Tinmouth Annual Report, 69 parcels are classified as "vacation" out of 331 total residential parcels. The 2007 Grand List showed 97 vacation homes out of 304 total residential parcels.) Seasonal housing units typically have fewer rooms than year- round housing units. The high concentration of summer camps around Chipman Lake account for most of these units in Tinmouth, though in recent years a number of these homes have been converted to year-round units.

Recent Trends in Housing Construction

A total of 47 permits were issued over the past ten years for houses and mobile homes, however nine were not constructed. Of the 38 built, 79% were for constructed homes and 21% were for manufactured housing which included mobile homes. Of note is that 15 other properties received permits to construct an addition to an existing home. Of the total permits issued, 10 were for the replacement of existing structures, five of those for a new manufactured home on the existing foundation, one to replace a mobile home with a house, and four houses were constructed to replace existing houses. The average size of all new homes built was approximately 2,200 square feet, with the largest new home at 4712 square feet and the smallest at 784 square feet.

There were 14 permits issued for subdivision development during this time creating 32 lots. These included three affordable housing projects which created eight affordable housing lots, of which only two had dwellings constructed on them.

The number of home sales between 2014 and 2024 totaled 111. These figures include both R1 (house with less than six acres) and R2 (house with more than six acres) properties as well as manufactured housing. The smallest residential lot (with home) sold was 1/3 acre and the largest was 600+ acres.

Home and Homestead Analysis

The new homes added to the town over the past 35 years have generally been well integrated into the community and followed principles that make Tinmouth unique: small homesteads in valley areas surrounded by mowed fields and / or forested areas. All additional housing places increased burdens on the town's transportation network (see below for details) and services (see chapter 4), but recent growth has not overwhelmed either of these. Three recent features of new housing development have, however, highlighted issues worth noting and addressing in this Plan. They are:

1. *Homes placed in the center of fields:* A small number of new homes have been located in the middle of former agricultural fields, effectively splitting the fields into two or three segments. More creative development of the site could have allowed for equal access and amenities to the landowner while preserving the future viability of agricultural activities for decades into the future. The Tinmouth zoning regulation's agricultural overlay was designed to address this issue and has been effective.
2. *Homes built in key wildlife habitat areas or corridors.* Identification of wildlife habitat and corridors is an ongoing effort in Tinmouth. Key areas were identified in 2002 and were afforded some additional protection through larger lot sizes connecting the Tinmouth Channel to highland areas across North East Road and across North End Road in two places. Lot size requirements appear to be addressing the issue at least partially, though they do not address small habitat areas.
3. *Conversion of homes around Chipman Lake for year-round use.* Town records indicate that several homes in the immediate vicinity of Chipman Lake have been converted to year-round homes. This has had the positive impact of ensuring that there are more people to watch over the neighborhood during the winter and allowing more people who love the town to live here throughout the year. Two key concerns, however, are the increased use of private roads that may not have been designed for winter use, and additional use of septic systems, lawn fertilizers, etc., that may be contributing to phosphorus loading and the growth of Eurasian Milfoil in Chipman Lake.

Homestead Policies

The preservation and renovation of existing housing stock is encouraged over demolition and rebuilding. Land should be managed and developed in ways that sustain a variety of future uses, including agriculture and woodland management.

- New construction and renovations that increase homestead energy efficiency are strongly encouraged.

Homestead Actions

- Provide residents with information about how individuals can support wildlife habitats and corridors.
- Provide residents with information about increasing energy efficiency through house siting, design, and renovation, and ways to help finance such work.

Economic Development

During the first part of the 19th century, Tinmouth evolved as a small rural community. The population, greater than exists now, supported a diverse economic base. Iron mines, blast furnaces and forges, marble quarries, sawmills, agriculture, and commercial establishments provided this relatively large economic structure. People of varied backgrounds and economic levels lived and worked together in what was essentially a self-contained and self-sufficient community.

Significant modification of that economic base has taken place over the years. In the more recent past, the town's economy was primarily related to agriculture, particularly the dairy industry (see below). The economic base is also influenced by a seasonal increase in population during the summer, related to the development of vacation homes within the town. Since 1960 employment has been dominated by residents commuting to out-of-town jobs. However, computers and our fiber-optic cable connections have offered increased opportunities for work at home. The changing nature of employment has a significant effect on land use. The Tinmouth Town Plan intends to accommodate these changes, especially the growth of home based occupations by local residents.

The Tinmouth Roadhouse and an auto-detailing facility are located in the hamlet of Tinmouth, but most commercial uses are dispersed throughout the southern part of Tinmouth Valley. These consist of: seasonal cottages, a campground, B&B's, and a seasonal guest lodge, among others. Several farms run seasonal farm stands, one of which offers a community supported agriculture (CSA) program. The 2024 Vermont Parcel Viewer lists 10 businesses or services offered, mostly by individuals.

Businesses Analysis

The impact of commercial uses is minimal within the town. Businesses draw mostly local patrons and do not generally present traffic, pollution, or noise concerns. The town is not likely to see a substantial increase in commercial activity in the near future because of its location and small population. In the 2017 residents' survey, strong support was expressed for agriculture (93%), bed & breakfast (76%), independent artisans (74%), and home-based businesses (72%). Conversely,

opposition was noted for heavy industries (82%), used or new car businesses (74%), gas stations (56%), and retail stores (41%).

Dairy and Beef Farms

There are several active farms in Tinmouth, including dairy, beef, vegetable, horse, crop, and maple that produce income from the land and help maintain the land's open character and preserve it. The Census reported 34 Tinmouth residents working full-time in the goods-producing, construction, and service-providing sectors, up from 31 in 1990. These industries supported an average wage of $58,742 per year in 2024, 85% of the Tinmouth Median income in 2022.

Businesses Policy

The Town of Tinmouth supports the development and expansion of agriculture (including forestry), B & B enterprises, independent artisans, and home-based businesses.

Open Fields and Forests

Open fields and forestland dominate the town's landscape. The degree to which this landscape is actively managed varies by property and location within the town. Today, 75% of the town's land is considered to be forested, while 25% is in open fields. These figures underscore a slow, but dramatic change in land use over the past century. It is estimated that in the early 1900s, 75-80% of lands in Vermont were in farm use, with Tinmouth as no exception.

Residents of Tinmouth identify strongly with the open fields that cover most of the Tinmouth valley and other flat or rolling parts of the town. Historically, much of these areas – save the wettest parts of the Tinmouth Channel – were actively farmed in one form or another. Today, open fields are still common on the less-steep slopes in town and make up approximately half of the 8,500 acres of land enrolled in the State's Current Use Program. The program, which reclassifies land to a lower taxable rate in exchange for farm and forest conservation, has been a popular choice for Tinmouth residents. The State of Vermont reimburses the Town for the majority of the difference in taxes collected.

Valley in the Morning Fog

Hayfields

Approximately 40 hayfields are used to support farms in the Tinmouth area and beyond. Landowners facilitate this system in part to make some income from the land and in part to keep the land open and to retain the town's character.

Forests

Forested areas cover virtually all of the land not actively cleared or considered to be wetlands,

including the overwhelming majority of land on steep slopes or at high elevations in the community. Logging has remained a source of income and employment for town residents. Managed forest area accounts for approximately 6,100 acres of land enrolled in the State's Current Use program. Those lands are scheduled with 20- to30-year harvest rotations.

Open Fields and Forestry Analysis

Open fields and forest land are both closely tied to the town's identity. In the town's 2006 resident survey, 86% of respondents said that working farms in Tinmouth were "important" or "very important" to them. These results were consistent among both year-round and seasonal residents. The same survey revealed a strong opposition to retail development on working farms (74), forest land (69%), and former farm fields growing back up (43%). While dated, these result suggest a long-standing community preference for preserving the working landscape.

Gulf Road. Looking North

Recent survey data from 2017 reflects strong community support for agriculture and forestry, with 93% of respondents favoring agricultural development. This may reflect a gradual shift in land use priorities from active farming towards stewardship, especially on marginal lands. Dairy farming, once a cornerstone of Tinmouth's agricultural economy, has faced challenges in recent decades due to competition from large-scale operations nationwide. These pressures suggest that the decline in local dairy farming is likely to persist.

In addition, it should be noted that larger farms in neighboring communities have suffered equal, and perhaps more substantial declines in recent years. At this point, the number of active farming operations in Tinmouth makes the town somewhat of an anomaly in the area. This is due, at least in part, to the dedication of landowners and town officials to promoting farming through perseverance, assistance between neighbors, and land use policies that support farming and open space conservation.

Open Fields and Forestry Policies

- Keep active, sustainable agricultural and forestry practices a top priority for land use in Tinmouth.
- Logging operations should take place at appropriate times of year.
- Remind qualifying landowners of the current use program option.
- Retain farms and large contiguous forest blocks wherever possible.

Open Fields and Forestry Actions

- Review land use regulations to ensure that sustainable agriculture and forestry practices are a top priority and information is available to landowners.
- Provide information to residents about the importance of undisturbed vegetated buffers.
- Identify patches of contiguous forest, those that are relatively large, in good condition (e.g., relatively unfragmented or un-developed).

Water Quality Issues

Similar to other areas of Vermont, nonpoint source pollution is the major source of water quality concerns in the Town of Tinmouth. Unlike point source pollution, such as a direct discharge or outfall pipes, nonpoint source pollution is more diffuse, harder to quantify and more difficult to control. Examples are runoff from parking lots, back roads, fertilized lawns, and runoff from agricultural fields. Agricultural and forestlands together produce 57% of Vermont's total phosphorus load to Lake Champlain. Stream instability, such as erosion, makes up 21% and developed lands (including paved roads) and unpaved roads contribute 13% and 5% respectively.

To a large extent, nonpoint source pollution control and nonpoint source pollution prevention focuses on the watershed approach, through land use management. Additional mitigation strategies used in Tinmouth include the applications of chloride on gravel roads to stabilize surfaces and reduce erosion, as well as stone-lining of roadside ditches to prevent sedimentation and protect aquatic habitats.

Water Quality Analysis

The majority of the threats and impairments to lakes and ponds in Tinmouth are caused by non-native nuisance aquatic species. The Poultney and Mettowee Basin has the highest concentration of lakes with dense populations of Eurasian water milfoil statewide. Tinmouth Pond has been documented as having a "moderate" level of milfoil infestation, indicating that locally abundant water milfoil growth here and there along the shoreline is evident. Members of the Tinmouth Pond Milfoil Project (TPMP) have experimented with the use of a suction harvester to remove milfoil beds. A 2024 aquatic plant survey found a 22% decline in milfoil growth at documented survey points compared to 2022. There are many other methods used for controlling Eurasian water milfoil on lakes and ponds in Vermont, including hand-pulling, the use of bottom barriers, mechanical harvesting, and biological controls. Adequate resources are a significant limiting factor to Eurasian water milfoil management at Chipman Lake and elsewhere in the state as recreational activities continue to spread it. One factor that should hamper its spread to nearby lakes and ponds is the lack of a formal public access to the Pond. Given the proximity of Chipman lake to the Tinmouth Channel, there is a concern that Eurasian water milfoil could spread into the Channel's wetland system. Continued monitoring and public education are recommended to prevent further infestation.

Wetlands protection is gaining momentum in southwestern Vermont. The Tinmouth Channel, that lies within the Otter Creek watershed, was designated in 2001 as one of three Class One wetlands in the state. Wetlands are usually associated with riparian areas and forested areas. Other wetland conservation efforts are underway in the West Rutland Marsh and Otter Creek headwaters.

Water Quality Policies

- Drainage, filling, and fragmentation of wetlands associated with agriculture, forestry, development and road construction should be minimized.

Water Quality Actions

- Increase public awareness of the important functions and values of wetlands.
- Invite conservation districts and other partners to provide workshops for citizens as to the value of wetlands to reduce flooding, filter nutrients, and recharge ground water.

- Direct landowners towards federal and state programs available for enhancement of protection of wetlands. Several sources of funding are listed at the Vermont Department of Environmental Conservation.
- Submit projects for funding through the South Lake Clean Water Service Provider (CWSP).
- Monitor the potential spread of Eurasian water milfoil from Chipman Lake into the Tinmouth Channel wetland system. Increase public education and prevention efforts to reduce risk of infestation.
- Coordinate with the Natural Resources Conservation Service (NRCS) which partners with the Clean Water Service Provider (CWSP), USDA, and local conservation districts to support voluntary wetland restoration and water quality improvement projects through technical assistance and federal funding programs.

Changes in Plant Diversity and Ecosystems

Tinmouth has a rich diversity of plant and animal species, as identified in Chapter II of this Plan. Some of our land development practices have dramatically impacted these ecosystems, however. Early forestry and agricultural endeavors changed the types of plants and animals most common to the Town, replacing forested areas with limited numbers of grasses and crops grown on the land. In recent years, while some of the biodiversity of the forests has grown back, residents have begun to introduce non-native, and in some cases, invasive plant species to the town. Invasive plants, once introduced to an area, typically spread very quickly and overtake existing species.

In Tinmouth, several invasive plant species have gained a foothold. These include barberry, buckthorn, honeysuckle, purple loosestrife, garlic mustard, Japanese knotweed, Eurasian milfoil, multiflora rose, phragmites, and wild parsnip. The plants have been introduced through multiple pathways: gardeners inadvertently planting them, construction and roadwork disturbing soils, and natural vectors such as wind, water, and vehicles. Importantly, birds also play a significant role in spreading invasive plants by consuming and dispersing seeds across the landscape, often far from the original source.

Diversity Analysis

Invasive plants are extremely difficult to control. By definition, they tend to thrive in their new host communities because they have few or no predators and adapt quickly to changing environments. In recent years, several newer homes have also created more manicured lawn area than had previously taken place in Tinmouth. Keeping diversity among the Town's plants is critical not only for the health of the Town's wildlife and its unique natural areas such as the Tinmouth Channel.

Diversity Policies

- Where planting is to take place, native plant species should be considered and invasive species completely avoided.

Diversity Actions

- Inform residents about the harmful effects that over-use of fertilizers on lawns and gardens can have on the growth of invasive plants and algae in nearby streams and ponds.
- Inform residents about ways to minimize the disturbance of lands when clearing or digging on their lands.

- Inform residents of the benefits of allowing native plants to grow, undisturbed, at the edges of streams and ponds.
- Encourage undisturbed vegetated buffers along all stream banks and shorelines in the town's zoning regulations.
- Limit the disturbance of natural habitats when performing maintenance on town roads.
- Identify locations of known wildlife crossings along town and state roads.
- Incorporate a map of wildlife crossing areas into the Town Plan and prioritize these areas for conservation.

Movement Across the Land (Tinmouth Transportation Network)

The rural character of Tinmouth, like many other small Vermont communities, is supported in large part by its network of rural roads comprising the town highway system. The road system is an integral part of the town's scenic landscape, settlement patterns, and economic well-being. The network of highways and roads forms a system that provides for the efficient and safe movement of traffic and ease of access to individual properties, while at the same time maintaining the rural character of the town.

"Many of Vermont's back roads have been widened, straightened, paved, or otherwise 'improved' to accommodate increased traffic and provide new access. Often, these modifications have caused unnecessary damage to environmental features and in turn have degraded the scenic, economic, and cultural values associated with the community."
- The Vermont Back Road

There are 34.92 miles of roads in the town, most of which are maintained locally. Route 140, which is the main east-west passageway, serves Tinmouth Center and provides an important link with the adjacent municipalities of Wallingford and Middletown Springs. East Road, North East Road, Mountain View Road, Route 140, North End Road and, seasonally, the Gulf Road offer north-south passage through Tinmouth, at lesser volumes, and connect the community to the towns of Clarendon and Ira to the north, and Danby and Pawlet to the south. East Road and North East Road are among the most heavily traveled local roads, serving as key north-south connectors and experiencing consistent daily traffic. Some portions of Route 133, state-maintained, lie in Tinmouth's southwest and northwest corners. The busiest roads include Route 133 near Route 140 (1,300-1,500 vehicles/day), Route 140 near West Hill Road (1,100-1,178 vehicles/day), and locally maintained East Road and North East Road, which also see high daily traffic (See Transportation Map, page 91.)

Transportation Network Analysis

As presently constituted and maintained, the road system is adequate to the needs of the town and, barring significant changes in the town settlement patterns, should not be changed. On a few occasions each year (Town Meeting and the Volunteer Fire Department's Game Supper, for example), parking in and around the Town Center is over congested

Buildings and uses located within close proximity to highways and roads may result in unsafe conditions or high public costs if the road requires widening. These situations can be avoided if buildings are set back an adequate distance from the highway.

Transportation Network Policies

- The roads in Tinmouth should be designed and engineered primarily for local use and maintenance, low traffic volumes and axle-weights, lower speeds, tolerant of curves, grade changes, and minimal shoulders (if they are paved at all).
- Improvements to town roads shall be carried out in a manner which will protect, conserve, and enhance scenic features and wildlife.
- Maintain or improve the current level of service on all roads on town; give priority to maintenance.

Driveway off North End Road

Transportation Network Actions

Rural Character and Safety

- Balance the needs for mobility and accessibility with the need to preserve the valuable scenic, natural, historic, cultural and community resources.
- Maintain or enhance the rural environment or setting as a primary design goal. Design criteria for improvements should include esthetics and the project's setting equally with engineering considerations.
- Limit heavy truck use on all roads. Prohibit regular heavy industrial truck use of roads as thoroughfares.
- Post and enforce speed limits on selected Class 2 and Class 3 roads.
- Designate the seasonal road through the "gulf" as a scenic back road; only improvements which would not disrupt its scenic qualities should be allowed on this road.
- Discourage planning and construction of traffic thoroughfares through Tinmouth.
- Road improvements must be fit to the community rather than have the community fit to the road.
- Maintain a transportation system that promotes the other goals and policies of this plan and makes it easier to direct desired community patterns of land use and economic development.

Maintenance and Improvements

- Ensure that all roads are maintained and upgraded to be safe for not only automobile and farm traffic, but allow for pedestrian, bicycle, horses and other shared uses.
- Plan land use and take actions to avoid the need to expand the capacity of town highways.
- Plan investments in roads to support desired land use patterns and to improve the livability of Tinmouth. Road improvements must be fit to the community rather than have the community fit to the road improvements.

- The impacts on erosion, siltation, and aquatic life of stream crossings necessary for development should be minimized by maintaining fish passage, preserving or enhancing habitat, and limiting in-stream disturbance. Before supporting any new transportation projects, policies or improvements, analyze and compare a reasonable range of alternatives:
- Evaluate alternatives in terms of environmental costs, energy use or conservation, social costs, and public investment; and
- Compare the ability of each alternative to meet the goals and policies of the town plan.

Utility Transmission Lines

Running in a north-south direction along the base of the eastern slopes of Tinmouth Mountain are the Green Mountain Power (GMP) transmission lines and right-of-way corridor (formerly owned by the Vermont Marble Company).

Utility Transmission Analysis

The distribution of a system must be efficient, but if improperly located, the character of scenic areas, views, and contiguous land uses can be adversely affected. In this regard, the town is concerned that they would be inconsistent with the objectives set out on page 3.

See also the discussion of transmission lines in Chapter V, under "Commercial Energy Generation and Transmission Facility Siting."

Utility Transmission Policy

- The town supports the continued use of the existing Proctor-Danby power transmission line by GMP to supply power to the Danby Quarry. It should not be upgraded to accommodate other uses without public input and review
- The town strongly advocates for a public and open local debate over the construction of any new utility grade power generation or transmission facilities.

Tinmouth Channel

Utility Transmission Action

- New electric transmission lines and major transmission facilities are strongly discouraged.

Historic Sites and Structures

Learned House, the stone house on North East Road, and the Sawyer House in the village, built in 1815 by ironmaster Wait Rathbun, has statewide significance.

The majority of Tinmouth's historic structures are related to the town's agricultural heritage. When we think of "historic structures" in Tinmouth, we generally think of long-standing farmsteads, barns, and the stone walls that were built both to show property lines and stow rocks that turn up each year in the soil. A handful of places in town—most notably the hamlet, which has been designated as an Historic District on the National Register of Historic Places—have historic structures that remind us of our civic past.

Several of the historic structures indicated on the Scenic and Historic Sites Map (see page 80) are worthy of preservation. The 'old store' in Tinmouth Center has been renovated to house the town office and a library. Next door is the Old Tinmouth Firehouse, which has been renovated into a public gathering place and concert venue. The school building includes two distinct sections, one of which features a slate roof and reflects the original historic architecture. While the school has undergone modernization to support contemporary educational needs, its historic character remains a valued part of the town's built environment and should be recognized and preserved.

Historic sites and structures are offered a limited degree of protection under the Vermont Statutes, Act 250 being the only regulatory mechanism addressing them. In granting permits for subdivision of lands, the District Environmental Commission must find that the proposed project "will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas."

A list of historic structures and their location appears in Appendix A, page 69.

Historic Sites and Structures Analysis

While residents of Tinmouth have a great love for the history of the town and its structures, there are, at present, no town-sponsored regulations or programs supporting their continued existence. The greatest challenge to keeping these structures is upkeep and maintenance. There does not appear to be substantial pressure to remove or redevelop these sites.

Old Creamery with Honor Roll Signage

Historic Sites and Structures Policy

- The Town of Tinmouth strongly supports the conservation and maintenance of historic sites and culturally significant features listed in Appendix A. These sites shall be preserved through adaptive reuse, maintenance support, and integration into town planning and zoning decisions. Future development should retain these elements of our past. Any highway work should pay special attention to the presence of stone walls. Whenever feasible, structures of historical significance shall be adaptively converted to new uses which would maintain their architectural or cultural value to the community.

Historic Sites and Structures Actions

- Work with landowners to apply for historic structure (including barn) preservation funds.
- Establish a Historic Preservation group to explore and recommend town sponsored programs or policies that support the preservation of historic structures.

- Create an Old Barn Commission that will work with landowners to rehabilitate barns through grants programs, low interest loans, and town events.

Old Water Wheel on Wright's Road (Formerly Blood Street)

Chapter IV: How We Provide for Our Neighbors

This chapter of the Plan is focused on the services and assistance that we, as Tinmouth residents, are responsible for or choose to provide to our neighbors.

Affordable Housing

Housing, for the most part, is a land use issue. How many houses should the town permit to be constructed, and where? The ground rules are set out in the Zoning Regulations. Housing is also a social issue of concern to some residents. When housing in Tinmouth is unaffordable, there may be less diversity in its population and, potentially, the loss of its younger and older residents to other communities.

Housing in Tinmouth is "affordable" when households with incomes at or below the county median income pay no more than 35% of their gross income on housing costs. (HUD standard is 30%) In Tinmouth, costs normally associated with rural housing development, such as on-site sewerage, drilling and piping for water supply, larger lot sizes (whether due to zoning or consumer tastes), telephone, TV, and electric connection fees, among others, may contribute to a smaller proportion of housing units in town being considered "affordable."

However, these residents did own a dwelling (house or mobile home on a lot) and may not be a significant market for new "affordable" housing if it was offered.

Local Subsidized Housing

Tinmouth is not an island, but an artificial set of boundaries created in the 18th Century and largely erased by the automobile. Tinmouth is not a very suitable place, from a countywide perspective, to build affordable single-family housing – if indeed it can be built anywhere in the county without substantial subsidies. The town offers few jobs or services. So life in Tinmouth is life with the automobile. Most families, even of modest means, find it essential to own and operate two cars, despite the high cost of gasoline. Thus, the cost of living in an "affordable" house in Tinmouth is not insubstantial, and notably more than living nearer the county's towns and urban areas.

Housing Affordability Analysis

Tinmouth is a small community, and efforts to alleviate affordable housing needs should be implemented on a scale appropriate to the population. In a rural town, efforts to provide affordable housing units may include: zoning which allows for living situations such as "mother-in-law" apartments and duplex houses, both allowed here; identification of existing structures that could be rehabilitated for affordable or senior housing; construction of mobile homes and "doublewides" on individual lots; and informal counseling and assistance to families in need of affordable housing.

Housing Affordability Policies

- Proposals for high-density affordable housing projects should be carefully considered to be sure that any proposed compromise with our rural environment is worthwhile.

Housing Affordability Actions

- Collaborate with not-for-profit housing organizations and government agencies to pursue affordable housing options consistent with the character of the town, to meet housing needs of Tinmouth residents and their families.

The Future

This plan is for eight years, based on conditions in from 2020 to 2025. Real estate trends are slow to change, so it should remain realistic for that time. However, economic and political conditions can change quickly, and could invalidate this section of the plan in less than eight years. Therefore, the Planning Commission should keep abreast of economic changes, and propose modifications to the Plan or the Zoning Regulations if it believes that this section is no longer appropriate.

Child Care

Access to child care remains a critical factor in supporting working families and maintaining the affordability and livability of Tinmouth. Without safe, accessible, and affordable options, families may be forced to choose between employment and caregiving. As of 2025, Tinmouth has one licensed child care provider, located at the Tinmouth Elementary School. No home-based or private providers are currently registered in the town.

Child Care Analysis:

It is difficult to assess the need for childcare facilities in Tinmouth because of the high proportion of adults who commute to other communities to work. It is expected that many parents choose to have their children near to their places of work, thus potentially reducing the need for facilities in Tinmouth. Parents and/or childcare providers in Tinmouth should be asked to provide input on the need for additional childcare facilities.

Tinmouth offers school 3 half-days a week for 3-year-olds and five days a week for four-year olds. School procedures allow K-6 children to be left at school as early as 7:30 and picked up as late as 5:30. After-school programs involve small fees. State and federal aid is available to help with before and after school fees. While Tinmouth School does not operate in the summer, our district, Mill River Unified Union School District, offers all-day summer programs at Clarendon Elementary for much of the summer.

Child Care Policies

- Encourage maximum flexibility for parents to have access to quality childcare providers.

Child Care Actions

- Permit the use of single-family homes in Tinmouth for small-scale family childcare facilities.
- Meet with current childcare providers and parents of young children to determine if there is a need for additional child-care capacity in town.

Childhood and Lifelong Education

Mill River Unified Union School District

Tinmouth Center School

In 2014 The Vermont Legislature determined that a key driver in the cost of education was that there were too many small school districts. Act 46 of that year required consolidation of local school districts (but not schools) into districts with at least 900 students. Reduced tax rates for five years were offered. For those who did not consolidate, the state would produce a mandatory merger plan in 2018. The five school boards in the Rutland South Supervisory Union, Clarendon, Shrewsbury, Tinmouth, Wallingford, and Mill River Union Middle/High School felt that the comfortable working relationship established as a supervisory union meant that we could combine with a minimum of difficulty and some advantages. Taxes were reduced for four years, and in the second budget the district produced there were significant savings, some unanticipated. With voter approval the boards were combined into the Mill River Unified Union School District in 2016. Tinmouth no longer has a school board of its own.

Tinmouth has a five-room school for its elementary students, pre-K through grade 6. The school, although small, brings together parents. In 2000, town residents donated time and money to construct the Tinmouth Community Center, which is attached to the school. It serves as both a lunchroom and gymnasium as well as providing a fifth classroom. While the town owns the school building and the Community Center, the school is responsible for maintaining both. In 2024, the Mill River Unified Union School District (MRUUSD), in consultation with the TMS principal, identified a need for additional learning space, which led to a lease agreement with the Tinmouth Community Church. TMS now rents the Community Church basement during the school year, which houses the school library, music class, and offers extra meeting spaces.

Tinmouth Elementary School Enrollment				
2021	2022	2023	2024	2025
50	61	72	71	70

In 2018, TMS also established outdoor classrooms on the land contiguous with the school property through the generosity of an abutting landowner. Each classroom has its own designated space in the woods; these spaces include meeting areas, bird houses with observation windows, and access to the Tinmouth trail. Each grade uses them in different ways; for example, pre-k uses them daily for nature exploration, community building, and academic learning.

The MRUUSD has an established 5-year maintenance plan, and TMS is a part of this plan. Some of the changes have included an air filtration system, heat pumps in all the classrooms, and new door safety systems. During the summer of 2025 many of the main floors (hallways and special education room) will be replaced with new tile.

Currently, in Montpelier, there is much discussion on how to reform the state's education system. At this point, we are unsure about what that means for TMS and MRUUSD. What we can say is that we have two more years on a three-year budget plan, where everything can stay status quo as long as nothing changes at the state level.

High school enrollment numbers are now co-mingled with the other three towns in MRUUSD. Most 7-12 grade students attend Mill River Union High School. There is a program among Rutland County high schools where a certain number of students can enter a lottery to attend a different secondary school.

PreK-12 Education Policies

- Provide Tinmouth students with the highest possible opportunities for education, not only by public policies but by supporting school activities and volunteering at the school. Participate vigorously in the activities of the Mill River Union School District School Board, so that Tinmouth continues to be regarded as an equal partner.
- Ensure that proposals over the future of Tinmouth Elementary School strictly adhere to the Articles of Agreement, which require a vote of the town to close it.
- Support the continued use of the Tinmouth Community Center and Community Church as part of the school's learning environment, and encourage public participation in Building and Grounds Committee meetings.
- Monitor state-level education reform discussions and advocate for Tinmouth's interest in maintaining local access to quality education.

<u>Post-Secondary Education</u>

Tinmouth, like many communities throughout Vermont, generally loses its college-aged population to other locations. Several post-secondary choices do exist in the Rutland region: Vermont State University, Community College of Vermont, and for some trades Stafford Technical Center (essentially a high school program). However, a substantial number of students from Tinmouth choose to leave the area for the many personal reasons that cause people to choose their colleges. Not many return; nor do many of those who attend local colleges choose to return here. Of the town's 553 residents in 2020, 3.7% were between the ages of 20 and 24.

The Tinmouth Community Fund has instituted a Scholarship Fund. It grants scholarships to Tinmouth residents who are attending post-secondary schools. When the Tinmouth School District merged into the Mill River Unified Union School District, over $75,000 in the school Tax Stabilization Fund was transferred to the Scholarship Fund. An annual plant sale, held for 35 years, contributes several thousand dollars a year, along with many individual contributions.

Post-Secondary Education Analysis

Youth relocation from Tinmouth and other rural communities is nothing new, and will likely continue in the future. Students are encouraged in school to learn about world cultures, economies, and political systems. It should be no surprise that many take the opportunity to learn about these firsthand. In Tinmouth the challenge of losing college aged students to other areas is coupled with an ongoing opportunity to attract other young people who want to explore living and working in a rural community. This is especially the case for younger individuals and families who would like to develop or take over a farm. The Town can support this by welcoming new residents and providing newcomers with mentoring in how to build a successful enterprise here.

Post-Secondary Education Policies

- Work with local landowners, the University of Vermont's Landbank, the Vermont Land Trust, the Vermont Housing and Conservation Board, and others to connect new farmers with farmlands available for lease or purchase in Tinmouth.

Lifelong Learning

Learning includes both formal and informal education.

We are fortunate to have many different avenues for education in our community. For adults, this includes activities at the Tinmouth Library and Rutland Free Library, and concerts and lectures in the Old Firehouse and the Community Center. The Town's support of the Rutland Free Library entitles every Tinmouth resident to a library card there. Lifelong Learning Analysis

- It is important that all Tinmouth residents have access to ongoing education. It spurs creativity and ingenuity at home and at work, and helps to fulfill our lives.

Former Weaks & Towsley Store

Lifelong Learning Policies

- The Town will continue to support the Tinmouth Library and the Rutland Free Library.
- The Town will continue to make its buildings available for educational events of interest to its residents.

Effective Emergency Management

Having emergency services available is among the basic needs of residents in Tinmouth. The Town, together with its non-profit partners, is active in all four phases of emergency management: mitigation, preparedness, response, and recovery.

Mitigation

In November 2021, the Town adopted an updated Local Hazard Mitigation Plan (LHMP), approved by FEMA. This plan replaces the 2015 Pre-Disaster Hazard Mitigation Plan and identifies the most likely types of emergency incidents and the locations where they are most likely to occur. It also sets forth a prioritized list of mitigation actions to reduce future damage. Key issues in Tinmouth include the potential for flooding or road closures in a handful of locations, as well as the presence of students at the Tinmouth Elementary School during school hours. Priorities in the Mitigation Plan include ensuring that Town records are safely stored, that the Town maintains an up-to-date Local Emergency Management Plan (LEMP), and that the Town gained entry into the National Flood Insurance Program. Refer to the 2021 LHMP for full details and status.

The Town has also completed an inventory of its bridges and culverts and adopted a series of codes and standards for road maintenance. Having these programs in place can reduce the Town's match against State dollars for certain public works maintenance projects.

Preparedness

The Town has an appointed Emergency Management Director who is responsible for working with town officials and first responders to maintain an up-to-date Local Emergency Management Plan (LEMP). The LEMP is examined and re-adopted on an annual basis to ensure that the phone numbers for key individuals are correct and that other key elements –such as making sure that the American Red Cross approves all shelters– are maintained.

Tinmouth Fire Department, 2021

Response

Fire Protection

The Tinmouth Fire Department is a volunteer organization. It belongs to a Mutual Aid Pact with Clarendon, Danby, Middletown Springs, Pawlet, Poultney, Ira, Wallingford and the Wells Fire Departments. The Fire Station is located in Tinmouth Center next to the Town Office and all fire protection equipment is owned by the department. The Fire Department has faced the challenge of retaining membership, as have most departments in the State. The recruitment of many junior firefighters to support the adult crew has helped the Department to remain a vital and effective organization in recent years.

Emergency Medical Service

The eastern portion of Tinmouth is covered by Wallingford Rescue Squad, which is five miles away. The west part of Tinmouth is served by the Poultney Rescue Squad and Middletown Springs First Response. The distances of these services from the town is a limiting factor in providing immediate emergency aid. The town has also participate in the state E-911 numbering system.

Police Protection

Tinmouth is covered to a limited extent by Rutland County's Sheriff's Deputies under contract between the town and the sheriff. Major crimes bring in the State Police. Tinmouth voters eliminated the office of constables.

Recovery

The Town maintains records of costs incurred in the recovery from disasters, including road repairs, culvert replacements, etc. Recording and reporting this information to Vermont Emergency Management and the local Agency of Transportation District Office helps the State to apply for Presidential declarations of disaster in larger events and can make the town eligible for substantial reimbursement of costs. The Town's emergency management officials, as well as residents in general, have also historically been very supportive of residents who have suffered damage or losses in an emergency and provided whatever assistance is needed or available.

Emergency Management Analysis

The Town of Tinmouth has been very active in its emergency management responsibilities. Because of the town's small population and rural setting, response to some types of emergencies will not be as quick as they might be in larger communities, but the town's residents have taken strides to be as self-sufficient as possible in the event of an emergency.

Emergency Management Policies

- Facilities and effective equipment as well as training for fire protection shall be provided within the financial capabilities of the fire department and town.
- Actively participate in multi-town emergency preparedness activities while striving to be self-sufficient wherever possible.

Emergency Management Actions

- Consideration shall be given to the formation of a First Response Squad to work with the Wallingford and Poultney Rescue Squads.
- Encourage town residents to join the Volunteer Fire Department.
- Promote emergency safety among households in Tinmouth by including preparedness tips in the *Tales of Tinmouth*.
- The emergency generators located in the Town Center serve as the town's designated emergency coordination and collection point during disasters or extended power outages. This role should be clearly communicated to residents in emergency preparedness materials.

Recycling and Solid Waste Disposal

Sewage and solid wastes can cause serious health and environmental problems if not properly treated and disposed of. It is essential for the Town to require and, where appropriate, to provide adequate and safe disposal systems for these waste products.

In 2002, Tinmouth voted to adopt an Interlocal Contract with the towns of Benson, Chittenden, Fair Haven, Middletown Springs, Rutland Town, Shrewsbury, Sudbury, and West Haven as the way to help address the solid waste needs of these communities. The contracting

towns are known as the Solid Waste Alliance Communities (SWAC). SWAC contracts with a part-time administrator to represent the member towns at state-wide solid waste and hazardous waste meetings, disseminate information to the towns, obtain grants for the benefit of the SWAC towns, coordinate recycling pickups, oversee shared equipment, and help maintain a Solid Waste Implementation Plan (required by State regulations) covering all SWAC towns. SWAC arranges household hazardous waste collections that are available to residents four days per year with drop-off service available through an agreement with the Rutland County Solid Waste Management District throughout the year. The cost of these collections is shared by the SWAC towns.

Tinmouth operates a solid waste transfer station, open for use by residents twice a week. Non-recyclable trash is disposed of by dumpster with a fee of $2.50 per bag. Cans, glass, and plastics are combined in a partial zero sort container, while paper is separated into 3 categories (mixed paper, newspaper and cardboard). Large metals, wood and computer equipment go into separate containers. Food waste is accepted for composting.

Recycling and Solid Waste Analysis

Reducing the quantity of waste materials is essential to controlling the cost of solid waste disposal. Reusing materials keeps them from the landfill as does composting organic matter.

Recycling and Solid Waste Policies:

- The town shall continue to meet the requirements of all State solid waste laws.
- The town should work with the State, SWAC, and private organizations to educate residents on the importance of reduction and recycling of waste materials and actions we can take to achieve goals.

Recycling and Solid Waste Actions

- Complete a comprehensive plan for the transfer station's facilities and operations.
- Regularly publish recycling guidelines in the *Tales of Tinmouth.*
- Provide residents with information about at-home composting through the *Tales of Tinmouth.*

Community-Sponsored Recreation

Recreational activities are both a use of land and a service supported by residents and town officials. The use of land for outdoor recreational purposes is discussed in Chapter III. The Town supports many recreational activities in several different facilities. The activities that take place within these facilities make up a big part of the community that is Tinmouth.

Recreational facilities owned or supported by the town include:

- The **Tinmouth Community Center**, opened in 2000. The facility was built using money and time donated by many Tinmouth residents. Today, it serves as a lunchroom and gymnasium for the Tinmouth Elementary School, a large meeting hall, and a public recreation facility for residents and visitors to Tinmouth. It is also the home of the Volunteer Fire Department's annual game supper and is a staging area for the Tinmouth Community Celebration each year.
- The **Tinmouth Library**, located behind the Town Offices, is open two days per week. The Library is staffed by a volunteer librarian and several others who work to keep the Library's holdings current and offer reading and writing groups and educational talks to residents of all ages. The number of users of the library has increased substantially over the past ten

years. All residents are also members of the **Rutland Free Library,** which has a wider range of books, periodicals, and programs. The two libraries complement each other, together providing services which are among the best in the Region.

- Ball field and children's playground near the Community Center.
- **The Old Firehouse,** a small meeting area and concert hall, located between the Town Offices and the new Fire Station. The Stage was refurbished in the late 1990s thanks to multiple grants from the Vermont Division for Historic Preservation and the work of Tinmouth residents. It offers one of a handful of community-supported concert series in the area.
- **The Tinmouth Purchase Recreation Area**, a 280-acre woodland lot near the top of Tinmouth Mountain, purchased by the Town in 1997 with assistance from the Vermont Land Trust and the Vermont Housing and Conservation Board. Accessible by foot, snowmobile, or horse for hiking, riding, picnicking, etc.

Recreational Program Analysis

Tinmouth has a lot going on for a community of its size. This can be attributed to the ongoing efforts of volunteers who organize the events and to residents and visitors who attend regularly and make events a tremendous success.

Recreational Program Policies

- The town strongly supports the use of its facilities for recreational activities of interest to residents.
- Continue membership with the Rutland Free Library and support for the Tinmouth Library.

Recreational Program Actions

- Support the work of the Tinmouth Recreation Committee while publicizing recreational events in the *Tales of Tinmouth* to encourage participation by all town residents.
-

Outdoor Recreation

Tinmouth Mountain Cabin

Residents of Tinmouth and visitors to the town use the land for all types of recreation: hunting, fishing, trapping, snowshoeing, hiking, cross country skiing, cycling, snowmobiling, ATV riding, boating, and horse-back riding, among others. The impacts of these activities vary widely, though most affect defined areas. The town's expansive forest and open areas make it ideal for these and many other recreation activities. Enjoyment of the land and water in the town is one of its key binding features and one of the reasons that residents are so strongly connected and committed to the long-term health of these natural features. The Tinmouth Purchase Recreation Area is a Town owned tract of land for the use and enjoyment of its residents and visitors. In 2014 with a grant from the State of Vermont to repair damage from hurricane Irene, the town created the Tinmouth Purchase Loop Trail,

accessible from Pent Road. In 2016, the newly formed Tinmouth Conservation Commission erected a cabin on the site of the former "Blanchard Camp," open to the public for overnight recreation. In addition, construction was completed on the Tinmouth Ridge Trail. Of particular note are the activities that have potential impacts on wildlife and natural resources within the town and on the quality of life of neighbors. They include:

- Erosion caused by overuse of trails by ATVs, mountain bikes, hikers, and horses. Repeated wear on the same trails – especially during the springtime – can create ruts and develop erosion patterns on steeper slopes. In general, users of trails in Tinmouth have been respectful of this and have not caused significant problems. If use of these trails increases in the future, steps may need to be taken to limit soil erosion.
- Noise pollution created by ATVs and snowmobiles. Overuse of trails can alter wildlife habitat and travel corridors because of the noise created by engines. Little research has been done in this area in Tinmouth to determine whether the current use has had a substantial impact.
- Aquatic nuisance species can be carried between bodies of water by boats and fishing gear.

Outdoor Recreation Analysis

Recreational uses of the land and water in Tinmouth are generally low impact, both because of the types of recreation most commonly exercised, and because of the limited use most trails, lands, and waterways receive. The slow conversion of land around residents' homesteads, as more people make their living inside the house or outside the town instead of using the land – will mean a change in the town's appearance; it could alter the plant and animal habitat in the town and exacerbate water quality issues in the town's streams.

Outdoor Recreation Actions

- Provide residents with information about trail designs and maintenance techniques that prevent erosion. Provide information to boaters and anglers reminding them to clean their gear carefully between outings to prevent the spread of aquatic nuisance species.

Town Governance

Our town operates on the shoulders of volunteers dedicated to Tinmouth and is supported by a small team of employees who keep our roads clear, our records in order, our school running effectively, and our transfer station operational.

There are five town-based boards in town:

- The **Select Board** is an elected, three-person board responsible for overall governance of the town. It oversees the work of town employees, proposes budgets for voter review, and sets town policies.
- The **Planning Commission**, appointed by the Select Board, currently has nine members and is responsible for developing the town plan, zoning regulations, and subdivision regulations, as well as reviewing subdivision and planned unit development applications. It is also responsible for working with the Select Board and other organizations and individuals in town to implement the plan.
- The **Zoning Board of Adjustment**, appointed by the Select Board, currently has seven members and is responsible for reviewing applications for conditional uses and waivers from the zoning regulation and for hearing appeals of decisions made by the zoning administrator.

- The Tinmouth **Recreation Committee** supports a wide range of recreational activities and trail systems throughout the town.
- The **Tinmouth Community Center Board**, elected by the organization's members, is responsible for the maintenance and any new projects associated with the Community Center.

In addition to these town-sponsored boards, there are a handful of non-profit organizations whose missions are to serve the town.

- The **Tinmouth Land Trust** works with landowners to encourage land conservation and affordable housing and, where appropriate, sale of land or development rights to organizations such as the Vermont Land Trust for conservation purposes.
- The **Tinmouth Volunteer Fire Department** currently has 26 members, and is looking for new junior members. The Department's mission is to provide emergency response services to the town and to neighboring communities on a mutual aid basis. The Fire Department typically receives half of its annual budget from taxpayers in town, with the rest coming from fund raising events, **donations**, and grants.
- The **Tinmouth Library Board** maintains our small library and runs activities throughout the year to encourage literacy.
- The **Tinmouth Conservation Commission,** steward of the town's natural resources, including wildlife, forests, recreational trails, and to educate the public on conservation topics.
- The **Tinmouth Community Church Administrative Council** is responsible for the upkeep and programming at our church located in the Center.
- The Tinmouth Community Fund gives small grants to support town spirit and a sense of community.
- The Tinmouth Historical and Genealogical Society, encourages preservation and historic conservation
- The Tinmouth Pond Milfoil Project works to control milfoil
- The town is supported by a small staff that includes a town clerk/treasurer/zoning administrator, town office assistants, road commissioner and road crew, and transfer station attendants.

Governance Analysis

Tinmouth has a long history of open and public decision-making. In 2022, voters adopted the Australian ballot system for all elections. Boards and committees are served by dedicated individuals from various backgrounds. The community of Tinmouth is a vitally important piece of the town. Work and school schedules, which regularly send residents outside the town's borders, bring with them challenges for the town's sense of community, but also opportunities to bring new ideas together in the service of one another.

Governance Policies

- The Town of Tinmouth seeks to engage in open and public governance at all times.

Governance Actions

- Continue to support the publication of the *Tales of Tinmouth*.
- Participate in Front Porch Forum.

Health Care and Elderly Services

In Rutland County, a variety of health and human services are available to residents. These include the Rutland Regional Medical Center, Rutland Area Visiting Nurses, Rutland Area Community Services, the Southwestern Vermont Area Agency on Aging, Long Term Care Ombudsman, Legal Service Attorney for Elders, Vermont Department of Health, The ARC of the United States, Rutland County Parent/Child Center, Vermont Association for the Blind and visually impaired, NewStory Center (formerly Rutland County Women's Network and Shelter). Tinmouth residents draw on the services of many medical practitioners in the area, as well as more distant resources such as the Dartmouth Hitchcock Medical Center in Lebanon, NH, and the UVM Medical Center in Burlington, VT.

Chapter V: Making Good Decisions About our Future

The future character and prosperity of Tinmouth will be a reflection of how we use the land. If uses change, so will the character. The purpose of this plan is to propose where changes in use might have minimal effect, as well as where present uses should be conserved. The broad goal is to allow new development of varying types, new uses and, at the same time, to preserve the overall character of the town.

Future Land Use Districts

The Land Use Districts, defined in the following paragraphs, are a guide for the growth and development of the Town. The four land use districts in Tinmouth are the Rural Residential, Lake Shore, Protection, and Conservation Districts. There also Agricultural, Ridgeline and Flood Hazard Overlay Districts. These land use areas provide for a variety of residential, commercial, agricultural, and recreational opportunities for the future while considering local environmental constraints as well as existing land use patterns. This Plan is not a zoning regulation, while it provides guidance for zoning changes and updates. The future land use map, designating the boundaries of each district, is an integral part of the plan. (See map p.88)

Tinmouth Center

Tinmouth Center is a hamlet in the center of town and the town's historic focal point. This village is a road junction containing a very low-density grouping of buildings without any municipal water, sewer, or sidewalks. Tinmouth Center was designated as a Village Center by the State of Vermont in order to support revitalization and community investment. This designation provides access to state grants and tax credits and reflects the town's commitment to preserving its historic and civic heart. See the village center map on page 93.

School, church, and town office each have small parking areas, and there is some roadside parking.

Primarily a governmental center, the town office, town library, fire station, elementary school, and Community Center attached to the school are located here. It is a registered National Historic District, with some town buildings and several houses of a historic nature. The town's only retail facility, Tinmouth Roadhouse, is located here. Thus, it provides a center for community interaction, a container for community memories, and a focus of community identity. However, it lacks the elements of a village, such as a store, gas station, or other commercial services, has no public utilities, and has a population of 20 or so. It is not the kind of village that development can be built upon. Its inhabitants must work at home or commute to jobs, and find stores and services in other towns the same as residents on scattered lots.

Tinmouth Center Analysis

It is hoped and expected that Tinmouth Center will remain the gathering spot for town residents. It is not anticipated that this will be a location for substantial future development, however. Poor soil conditions, the lack of any public infrastructure and lack of commercial services make future development no more feasible in the hamlet than elsewhere in the community. The 2017 survey found that residents were 2-1 against allowing smaller lots adjacent to the village, so any future development must be on five acre lots.

Tinmouth Center Policies

- Tinmouth Center shall remain the focus of the Town in terms of town services and gatherings. Any development in or near the hamlet shall be compatibly integrated with its appearance and its existing form. Its status as a National Historic District shall be protected by the community and the town government.

Tinmouth Center Actions

- Maintain the historic appearance of the Tinmouth Village National Historic District.
- Complete the restoration of the Old Creamery.
- Utilize the Village Center Designation, which provides incentives for development in Tinmouth Center and gives the town higher priority in State of Vermont grant applications.

Rural Residential District

Settlement in the outlying areas of the town historically has been associated with farming and related agricultural uses. For this reason, homes have been generally located on land that is suitable for residential purposes and at the same time, they have been compatibly related to the pattern of open fields and woodlands.

Rural Residential District Analysis

Recent rural settlement has shifted away from traditional farming, but rather to permanent residences or vacation homes. This type of housing and country lifestyle is highly valued, yet breaks up and can fragment continuous tracts of land formerly used for agriculture and forestry and often contributes to sprawl. The creation of a Rural Residential District is an attempt to accommodate the demand for rural housing, (usually a single-family home, a few farm animals, a garden and one or two small out-buildings), with minimal economic and environmental impacts.

The development of residential housing in Tinmouth (described in detail in the Housing section of the Plan) creates the largest growth pressure in town. Every effort should be made, within this district, to have development sited in locations that preserve open space, forested areas, wildlife corridors, and other and natural resources.

Rural Residential District Policies

- The Rural Residential District shall promote densities that maintain a rural character.
- Buildings, driveways, and other structures should be in places with lower quality agricultural soils and away from key wildlife habitats and other areas with sensitive natural environments.
- Density of development should be guided by the limitations of the land and specified in the town plan and zoning bylaws (as described in Chapter I).
- Regulations may provide for special considerations or increased densities of development if the proposed development conserves or protects important natural features, historic buildings or vistas, or includes the establishment of affordable housing.

Gulf Road Farmer in Action

Lakeshore District

Chipman Lake (commonly known as Tinmouth Pond) has long been the focus of seasonal recreation activities—swimming, boating, etc. The shoreline is characterized by numerous pre-existing small lots, with minimal setbacks from side lot lines and the lake, accommodating vacation camps and cottages, sometimes with small outbuildings.

During the summer, the lakeshore is also home to the largest single concentration of population in the town.

Lakeshore Analysis

In recent years, some seasonal cottages have been converted to year-round residences or, in some cases, torn down and replaced by more substantial buildings. If this trend continues, there may be a need to examine road conditions and access to properties for year-round emergency services.

Lakeshore Policies

- New structures should be sited with the greatest possible sensitivity to minimizing intrusion on neighbors and the shoreline.
- New construction should include measures to limit the amount of sedimentation and nutrients delivered into the Pond.
- Wherever possible, undisturbed vegetated buffers should be established along the shoreline to promote health of the Pond.

Lakeshore Actions

- State Lakeshore regulations should be strictly enforced in any new construction.
- Examine road conditions and access to properties for year-round emergency services.

Conservation District

Conservation areas contain lands that are very sensitive to development for a variety of reasons. They generally contain significant natural resources such as large forest blocks, high elevations, and steep slopes.

The town added land to this district in the areas surrounding the Tinmouth Channel and connecting the Channel to Tinmouth Mountain. The decision to add this land followed an extensive public input process and is intended to help maintain the quality and function of this unique wetland and wildlife habitat.

Tinmouth Pond, aka Chipman Lake

Conservation District Analysis

While the goal of maintaining larger, less disturbed land area in the town has been supported by the Conservation District, land development over the past 30 years has not always forwarded the intent of maintaining viable agricultural and forestry lands or wildlife habitats. The Planning Commission has learned that supplemental tools, in addition to minimum lot sizes, are necessary to help landowners identify and conserve sensitive areas within the Conservation district.

Conservation District Policies

- Conserve sensitive areas within the Conservation District while allowing for limited, low intensity development.

Protection District

Protection areas contain land that is unconditionally protected from development such as lands above the 2,500 foot contour, lands that are in the floodplain, and significant natural features and wetlands. These include the 1,246 acre Tinmouth Channel (a Class 1 wetland), the Poultney River source wetland, Crow Hill Wetland, Ballou's Swamp, the top of Tinmouth Mountain above 2,500 feet, and the narrow, steep-sided Tinmouth Gulf.

Protection District Analysis

Lands in the protection areas are suitable for low-impact recreational uses, such as hiking and nature trails, hunting, and other human-powered low impact recreation. Intensive motorized recreational activities, such as "four-wheeling", are not appropriate or should occur only in designated areas. The state of Vermont requires that agriculture and forestry be allowed in all zones, including the protection areas.

Protection District Policies

- The Town of Tinmouth shall prohibit permanent structures in the Protection District.
- Subdivision of land within the Protection District is strongly discouraged.

Agricultural Overlay District

Agriculture is an important part of the economy, image, and lifestyle of Tinmouth. The continued economic success of this activity is directly related to the availability of large amounts of undeveloped land with moderate slope and productive agricultural soils. Retaining large tracts of undeveloped land in areas identified as high resource value for agriculture is vital to ensuring the future viability of farming in Tinmouth. Based on current land use as well as consideration of soil associations and slopes, some lands have been identified as of the greatest agricultural resource value that require protective measures. These lands were incorporated into a special "Agricultural Overlay" district in the town's zoning regulations in 2002. This district's regulations strongly encourage new development to be situated on the edge of farms and other open fields instead of in their centers. Development in this district requires a conditional use permit.

Agricultural Overlay District Policies

- Maintain the Conditional Use policy in this district with a flexible approach to siting.

Ridgeline Protection Overlay District

To retain the undeveloped character of these prominent features of the Tinmouth landscape, protect important habitat corridors for wildlife as well as viewsheds from Tinmouth and surrounding communities, and prevent development on shallow soils and/or steep slopes, a "Ridgeline Protection Overlay District" has been created. Development in this district requires a conditional use permit.

Where and How Development is Encouraged

Intermediate Slopes and Terraces

The area of intermediate slopes and terraces is a transitional zone between the valley floor and steep slopes. Its landscape form is characterized by undulating topography interspersed with small terraces, plateaus and knolls. Because of this diversity, settlement in these areas will have minimum visual impact if properly sited.

Intermediate Slope and Terrace Policies

- Settlement shall occur in areas of intermediate slopes and terraces where it can follow natural terrain and other scenic features to minimize visual and environmental impacts.

South-Facing Slopes

In the winter, cold winds are generally from the northwest. During the same season, the sun's orientation and altitude decreases, reducing the duration and angle of exposure on northern slopes. Snow and frost accumulations tend to be greater and remain longer than on southern slopes. These factors produce a stressful microclimate. Consequently, buildings usually require greater amounts of insulation and/or energy to produce comfortable interior climates. By contrast, buildings oriented towards a southern exposure benefit from longer periods of sun during the winter, protection from northerly wind, and longer growing seasons.

South Facing Slope Policy

- Where practical, settlement should occur on south-facing slopes.

Forest/Open Field Edge

Open fields are the foundation of the town's agricultural heritage and future (See Chapter III). In addition, the contrast between open fields and the woodlands that enclose them form the most apparent visual aspect of the town's landscape pattern. The fields open up long views across Tinmouth's valleys. Therefore, their scenic quality is highly vulnerable to settlement. Tinmouth's landscape pattern has evolved primarily as a result of agricultural pursuits. The isolated groupings of farm dwellings and buildings are characteristic of these activities. They provide focal points of scenic and historic interest.

Maintaining Tinmouth's active farms, open fields, wildlife corridors, and unbroken productive forests are all top priorities of this plan. It is also important, however, for residents and landowners to have room for future development. Building along the border between these open and forested areas will have the least impact on the community's economic potential and natural habitat and will give all residents and visitors the opportunity to share the scenic beauty of the town.

Forest/Open Field Edge Policy

- Development is strongly encouraged to take place on the border between open fields and forested land to avoid the loss of either resource.
- Views to farms shall generally be preserved, and settlement should be clustered to emulate the isolated groupings of farm structures.
- Invasive species are detrimental to native plants and animals— Emerald Ash Borer, Asian Long horned Beetle, Spongy Moth, Woolly Adelgid, European Starling, House Sparrow, Mute Swan, Jumping Worms, and Long horned Ticks
- Field edges provide important habitat for wildlife and should be maintained as transitional zones.
- Actively monitor and remove invasive species that threaten native wildlife, forest health, and overall biodiversity in The Region.

Areas Sensitive to Development

An analysis of the natural processes and formation comprising Tinmouth indicates that there exist certain areas which, because of their fragile nature, irreplaceable value, or vital function in

Colvin Hill Looking North

maintaining the environmental health and quality of the town, require special conservation and protective measures related to future development. While some of these areas are protected under current planning and zoning, such as the Protection District and the Wellhead Protection Areas, some are not. Below, the nature and importance of these fragile areas are described and policies are set forth for any future development in the town.

Steep Slopes

When the steepness of slopes exceeds 15 percent, the suitability of land for settlement decreases significantly. On steep slopes, surface water runoff is high. When vegetation is removed for the construction of roads and buildings, the area for absorption of precipitation is reduced. This increases the risk of erosion, sedimentation, and downstream flooding. The proper functioning of subsurface disposal systems is severely limited on steeper slopes. Slopes greater than 20 percent present difficulty in complying with the Vermont Health Regulations governing septic systems for subdivisions. In addition, settlement on steep slopes can be costly to the town for the maintenance of roads and utilities, installation of utilities, and emergency access infrastructure. Settlement on these areas will be extremely visible from other areas within the town.

Steep Slope Policies

- Construction or other development activities on slopes greater than 15% should include erosion control measures.
- Settlement shall avoid areas where the steepness of slope is over 20 percent.
- Settlement on steep slopes shall be limited to low densities and locations which will have the minimal visual impact on scenic quality.

Ridgelines and Elevations Above 2,500 Feet

As part of the Taconic Mountain Range, the land in Tinmouth rises to relatively high elevations and presents two prominent north-south ridgelines. At high elevations, generally above 2,500 feet, and ridgelines precipitation is greater, air and soil temperatures are lower, soils are shallow and low in nutrients, slopes are steep, wind speeds are higher, and re-establishing vegetative cover is typically a slow process. Such characteristics create an environment which is intolerant to intensive use. If significantly disturbed, excessive erosion may result. These high mountain areas also play a vital role in the water cycle. The greater amounts of precipitation filter through the thin soils, eventually reaching major groundwater supplies. Uses which result in the removal of vegetation and soil cover are especially detrimental to the natural drainage of water. In addition, areas of high elevation and ridgelines are strong visual features and form a large part of what residents consider to be the town's unique landscape. Clear- cutting or development in these areas stand out dramatically from long distances.

The debate over large-scale wind turbines is growing in Vermont. One older wind farm in Searsburg has operated for several years with relatively small turbines. It is now expanding with much larger ones along two ridgelines. Others have been built in Lowell and Sheffield in the Northeast Kingdom and in Milton. Their turbines are up to 499 feet high and in arrays of up to 22 machines stretched along miles of ridgeline. The size and weight of the components requires construction of roads 60 feet wide with moderate grades, requiring large amounts of blasting and grading up to and along the ridgeline. Utility scale wind turbines over 125 feet at the maximum blade height and "wind farms" of two or more turbines are incompatible with the scenic beauty and rural residential character of our town. Although the town lacks legal jurisdiction over such

development, the Public Utility Commission should be made aware that it is incompatible with the town, as demonstrated by our ridgeline ordinance. Smaller turbines for individual family or farm use, under 125 feet high and not on ridgelines, are permitted by the Zoning Regulations. For further discussion of renewable energy production, and Tinmouth policies please see the section on Commercial Energy Generation and Transmission Facility Siting.

Ridgelines and Elevations Above 2500 Feet Policy

- Maintain and enforce the Conditional Use policy in the Ridgeline Overlay district.

High Water Table

Areas with a seasonal or year-round high-water table within 4 feet of the ground surface place very critical constraints on settlement. Use of subsurface sewage disposal results in pollution of surface and ground water. Cellars are frequently filled by excessive seepage of water. While high water tables may occur in many areas throughout the town, available soils information generally suggests that this condition is directly related to the occurrence of the Muck and Peat association and commonly related to the Bernardston-Pittstown association. In addition to the constraints above, the Muck and Peat association, because of its low bearing capacity, cannot provide stable support for the construction of buildings.

High Water Table Policies

- Development is strongly discouraged in areas with high water tables.

Shore and Stream Banks

As the interface between land and water, shorelines and stream banks must be considered as being fragile areas. Certain species of wildlife are greatly dependent upon the particular habitat of these areas. Vegetation along the water's edge acts as a stabilizing force, preventing erosion and siltation, and providing shade to cool water temperatures. Streams are under state control but permission may be required to cross private lands for fishing and hunting. Building too close to shorelines reduces the scenic quality of surface water, as evidenced by the settlement which has occurred around Tinmouth Pond. Effluent leaching from septic systems placed too close to the water's edge is very likely to pollute ground water and surface water.

Landowners should be aware of Vermont's Shoreland Protection Act of 2014, which requires a permit for any new development within 250 feet of a shoreline.

Shore and Stream Bank Policies

- Shorelines and stream banks shall be retained in a natural state and protected from uses and settlement which would cause erosion, prohibit public access, and reduce scenic qualities.
- Vegetated shoreline and stream bank buffers shall be required for all new development near year-round water bodies.
- Surface water shall be protected from settlement and uses which would reduce their water quality or despoil the scenic appeal of their stream banks and shorelines through setbacks, buffer strips, and minimal land disturbance for construction erosion control.

Shore and Stream Bank Actions

- Prepare and publicize information for residents about the ecologic and long-term financial benefit of protecting stream banks and shorelines.

- Encourage property owners to eradicate invasive species along riparian buffers.

Wildlife Habitats and Corridors

The Town of Tinmouth is positioned in the center of key wildlife corridors and habitat areas. Mostly unbroken forest areas stretch from Dorset through Danby and Tinmouth into Ira and beyond through the mountain ranges. Of particular importance are links between mountain areas and the Tinmouth Channel, a critical water source and habitat area for mammals, insects, birds, and reptiles. Those developing land throughout the Town of Tinmouth should be careful to minimize impacts on wildlife by ensuring the continuance of connected forest and wet areas. See the Wildlife Habitat Suitability Analysis.

Wildlife Habitat Policies

- Wildlife habitats (wetlands, deer yards, bear range and surface water) and corridors between habitats shall be retained in their natural state and protected and buffered from uses and settlement that would reduce their vital function. Rare and endangered plants and animals and their habitats shall be protected and preserved.
- Fragmentation of forest blocks shall be avoided and connectivity between blocks encouraged.
- Invasive species shall be identified and eradicated to protect native ecosystems.

Glacial Eskers

The glacial eskers, on the floor of Tinmouth Valley, define a rare and unique geological area. They contain a large and porous gravel deposit which serves as a large-scale cache for water serving the Tinmouth Channel. While mostly located within the town's Protection District, they stretch into neighboring land use districts.

Glacial Esker Policy

- Tinmouth's glacial eskers shall be protected from use and settlement which would destroy their scientific or water-carrying value.

Aquifer Recharge Areas

The quantity and quality of the town's groundwater supply is directly related to the type and intensity of uses which occur in areas of high aquifer recharge. Extensive settlement can greatly reduce these areas of recharge and increase surface runoff, thus decreasing infiltration of surface water. Also, the quality of ground water may be threatened through numerous subsurface sewage disposal systems.

Aquifer Recharge Area Policy

Aquifer recharge areas shall be protected from uses and settlement which would significantly reduce their permeability or be of danger to the quality and/or quantity of ground water supplies.

Wetlands

The wetland areas within the town contain special vegetative communities. They form a distinctive and unique landscape pattern of high scenic quality.

Wetland Policies

- Wetland areas shall be retained in their natural state for the provision of wildlife habitats, retention areas for surface runoff, recreation, and scientific value. A naturally vegetated buffer strip of at least 100 feet in width will be maintained around all wetlands identified on the town's wetland inventory map. Direct discharges into wetlands are prohibited.
- Wetland areas shall be protected from uses which would reduce their scenic quality. Class I and II wetlands and Class III wetlands of concern to Tinmouth are shown on the plan's Natural Resources map.
- For Class I and II wetlands, information regarding actual wetland boundaries and conditional use determinations for individual sites can be obtained from the Department of Environmental Conservation. The current Vermont Wetland Rules should be consulted for allowed uses and zoning permit restrictions.

Productive Woodlands

Timber is a potential resource of commercial value. Productive growth and management are dependent upon extensive areas of connected forestland with suitable soil conditions for tree growth. Maintaining these forests is also critical for wildlife habitat, and water quality.

Woodland Policies

- Maintain large, forested blocks of land within the Town of Tinmouth and between Tinmouth and neighboring communities.
- New development should take place on the edges of forest areas to avoid the interruption of connected woodland areas and loss of viable silvicultural activities.
- Encourage responsible logging. Landowners are encouraged to consult with a forester before hiring a logger.

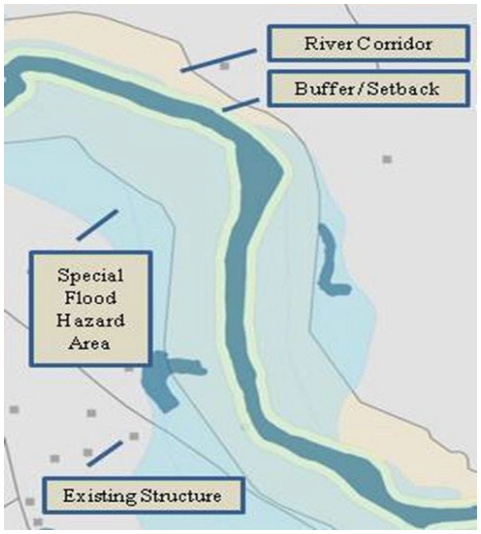
Floodways and Floodplains

A floodway includes the channel of a watercourse and the adjacent land areas that may be covered by water through the normal rise and fall of the water. Floodplains are low-lying areas of land where floodwater periodically spreads when a river or stream overtops it banks. Vegetation in the floodplain helps slow the flow of water. Future development in floodways and floodplains should be avoided whenever possible due high risk of damage and cost to landowners, the town, and state and federal government.

Floodplain Policies

- The town shall review development in the floodplain in accordance with National Flood Insurance Program regulations and the town's flood insurance rate maps.
- Participation in the Vermont Flood Information Database (WFID), a statewide tool for tracking flood damage, mitigation efforts, and infrastructure vulnerabilities.

Flood Resilience

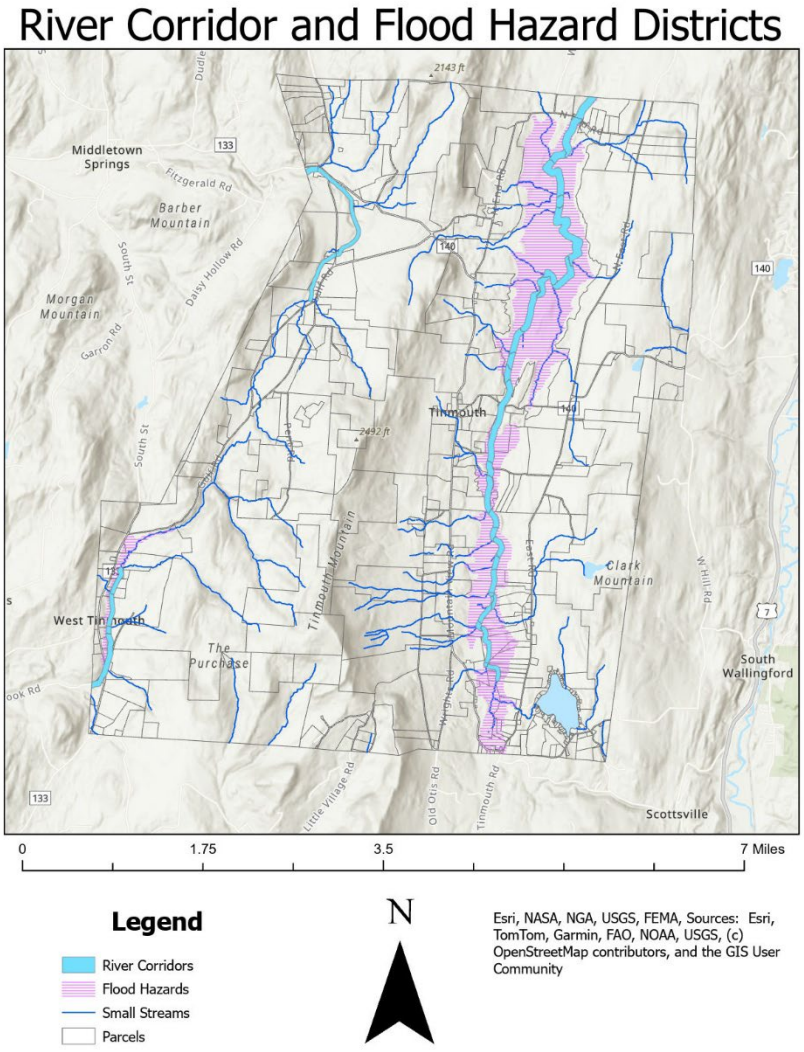


Flood events are Vermont's most frequent and costly type of natural disaster. There are two types of flooding that impact communities like Tinmouth: inundation and flash flooding. Inundation occurs when water rises onto low-lying land. Flash flooding is a sudden, violent flood, which often entails fluvial erosion (stream bank erosion). The combination of flash flooding and fluvial erosion causes the most flood-related damage in the state. Tinmouth's steep terrain and narrow valleys make it particularly vulnerable to fluvial erosion, even in areas outside federally mapped flood zones.

To meet the new state requirement of identifying flood hazard and fluvial erosion areas and designating areas to be protected, maps are an essential aid. The National Flood Insurance Program (NFIP) was created by the Federal Emergency Management Agency (FEMA) to address inundation hazards. Flood insurance rates are based on Flood Insurance Rate Maps (FIRMs) or Digital Flood Insurance Rate Maps (DFIRMs), which delineate areas of the floodplain likely to be inundated during a flood. These are identified as a Special Flood Hazard Area (SFHA) or with a 1% chance of flooding (100-year flood). Tinmouth participates in the NFIP and has adopted flood hazard regulations to reduce risk in mapped areas.

However, in Vermont, two thirds of flood damages occur outside of federally mapped flood areas. Vermont's River Corridor and Floodplain Management Program, developed by the Vermont Agency of Natural Resources (ANR), delineates areas subject to fluvial erosion. River corridor maps are designed with the recognition that rivers are not static. A certain amount of erosion is natural when floods reach Tinmouth because of the town's relatively steep terrain and frequent storms.

Because the methods of mapping inundation and fluvial erosion corridors differ significantly, flood maps and river corridor maps differ to some degree. Figure above a generic depiction showing how the Special Flood Hazard Area differs from the River Corridor.



Tinmouth is committed to making knowledgeable and strategic decisions about how to best protect, manage, and restore watershed resources and minimize flooding. Riparian buffers reduce flood hazards and stabilize stream banks, attenuate floods, provide aquatic and terrestrial habitat and wildlife corridors, filter runoff, absorb nutrients, and shade streams, keeping them cool. Wetlands, like the Tinmouth Channel, also prevent flood damage and are a vital component for maintaining the ecological integrity of land and water. In addition, upland forests also moderate flood impacts and attenuate flood impacts. Steep slopes, on the other hand, can be a detriment during flooding by amplifying water volume and velocity in rivers and streams. A map of Tinmouth flood and river corridors is shown above.

History of Flooding in Tinmouth

Flooding is a relatively low hazard risk for Tinmouth. Because of the town's system of east-west roads and north-south orientation of its waterways and proactive actions by the road foreman, the town experiences relatively minimal damages during flooding events. Compared to neighboring towns, in 2011 damages from Tropical Storm Irene were minor. A few roads in Tinmouth were damaged by erosion and the town received $18,655 in FEMA funding for replacement gravel. Other recent flooding in Tinmouth:

- January 1996—Countywide flooding, FEMA declared disaster, cost to Tinmouth—$2,515.
- December 2000—Countywide flooding, FEMA declared disaster, cost to Tinmouth—$25,684.

In Tinmouth, road damage due to flooding and fluvial erosion usually consists of road and

culvert damages. Problem areas are: 1) Near the intersection of Rt. 133 and Rt. 140. This area also has three trailers in it that could be adversely affected in a 100-year flood.; and 2) Pent Road where it turns to Class 4.

Current Conditions

Very few structures are built in the flood plain, so the danger of flooding to residences and other structures is minimal. E-911 mapping data indicate 11 structures are within the SFHA (the 1% annual chance flood hazard areas) and none in the 0.2% annual chance flood hazard areas of the town. The types of structures are listed below.

Existing Structures in Mapped Flood Hazard Areas		
E-911 Structures	1 % (SFHA)	0.2 %
Camp/bungalow	4	
Church		
Commercial		
Education		
Fire		
Government		
Lodging		
Mobile Home	2	
Multi-Family		
Other Commercial		
Other Residential		
Single Family	5	
Total E-911	11	

In 2010, Tinmouth adopted flood hazard regulations to reduce flooding and fluvial erosion by avoiding new development/fill/removal of wetlands in the Special Flood Hazard Area. The town is enrolled in the National Flood Insurance Program (NFIP) which enables residents to purchase flood insurance and access federal mitigation funding. The town also participates in the Vermont Flood Information Database (WFID), which tracks flood damage, infrastructure vulnerabilities, and mitigation efforts.

Flood Resilience Actions

- Explore the removal of structures in flood areas. Existing homes and businesses at serious risk of flood damage should be identified and prioritized by the town for mitigation actions such as elevation/relocation or purchase and demolition.
- Limit percentage of impervious surfaces. Because impervious surfaces prevent the infiltration of water into the soil, these man-made surfaces exacerbate flooding by increasing the amount and velocity of storm water runoff, particularly in areas where such surfaces are prevalent.
- Maintain vegetated buffer strips in riparian zones surrounding streams and rivers.
- Maintain upland forests and watersheds for predominately forest use.
- Require new development to preserve vegetated riparian buffer zones that are consistent with state riparian buffer guidelines.
- Collaborate with state and regional partners to identify, map, and restore river corridors in Tinmouth. These efforts should focus on reducing fluvial erosion, protecting riparian habitat, and improving flood resilience.

Standards for New Development, Regardless of Location

General Development Policies

- Include provisions in both the zoning and subdivision regulations which allow for review of site conditions, settlement patterns, natural features, the placement of driveways, the location of buildings, and other aspects of residential development that may impact sensitive natural areas, water quality, open spaces, the working landscape, and important views and vistas. Upon completion of the Town Plan, review and update the zoning ordinance for compatibility with the Plan.
- Minimize functional conflicts and require that developers address and mitigate traffic problems which are generated by their developments.
- Critically review and evaluate proposed development which generates unsafe traffic conditions, especially along sections of highway with low sufficiency ratings.

Conflicting Activities

Tinmouth residents have a tradition of sharing living and working space. Unlike many communities which have slowly segregated their land uses from one another – including farming from housing—Tinmouth retains a rural character precisely because of its mix of homes and small, home-based businesses and farming operations. At the same time, residents recognize that there are certain activities which can create conflict if located in proximity to one another, most notably activities that include blasting or drilling. Because of Tinmouth's widespread residential and agricultural activities, the entire town must be considered sensitive to incompatible land uses.

Conflicting Activities Policies

- Quarrying, mining, blasting and working for mineral resources shall be prohibited. Removal of naturally occurring sand and gravel deposits may be permitted, with suitable screening from neighbors, and without any blasting.

"The term 'parcelization' is used to describe changes in ownership patterns whereby large tracts are divided into smaller parcels. The act of parcelization is mostly a legal exercise where large tracts of land are divided into smaller ownerships or land holdings. The result of parcelization may simply be an increase in the number of people who own a specific parcel of land. However, when larger parcels are divided and sold or transferred into multiple parcels, often through the process of subdivision, the result can be disjointed land ownership patterns that promote new housing and infrastructure development (roads, septic, utility lines, etc.). When this development occurs it can fragment the landscape and negatively affect plant and animal species, wildlife habitat (called habitat fragmentation), and water quality. It can also affect the viability of large tracts of forestland to contribute to Vermont's rural economy. Forest fragmentation and habitat fragmentation are often the result of parcelization and its associated development."

From Final Report of the Forest Parcelization Roundtable 2007 Jamey field, Vermont Natural Resource Council

Forest Protection

Development pressures can pose problems for maintaining forest blocks, wildlife habitat, and habitat connectors. Once fragmented, the movement of plants and animals is inhibited. This restricts breeding and gene flow and results in long-term population decline. Besides a long-term loss of biodiversity, fragmentation can lead to an increase in invasive plants, pests and pathogens,

and reduction in water quality. Connected forest habitats are a key component of forest adaptation and response to climate change, while fragmentation is a threat to this natural resilience.

Fragmentation of timberland into smaller holdings can make it more difficult to use the forest in traditional ways. Silviculture and wood harvesting can become impractical and economically nonviable as well as a potential loss of biomass for renewable energy generation. Functional connections among forest and wildlife blocks should be maintained in such a way to allow for wildlife dispersal and movement safely across large areas. Many of the large habitat blocks in Tinmouth lie under conservation easements, either private or governmental, that prevent further fragmentation.

Wooded habitat on both sides of the road for 1,000 feet or more is the model for optimal wildlife movement. Habitat connectivity can also be realized in the riparian zones of surface water and wetlands. Steep slopes adjacent to roads should be kept but the use of perched culverts, which inhibit fish migration, should be limited.

Forest Protection Policies

- Using the maps created by the town supplemented by state forest block data as a guide, the town should keep critical habitats functionally linked with larger blocks of habitats (forest lands and other natural communities).
- Encourage landowners to enroll forest parcels in conservation programs like Current Use to support long-term protection.
- These large "core" habitats should be bordered by compatible land uses and be interconnected by unfragmented open spaces and contiguous forest.
- Review development proposals near forest blocks for fragmentation impacts, prioritizing ecological connectivity.

Prevention of Strip Development

Because of the topographical constraints on Tinmouth's highway system, growth may tend to occur in strip-like fashion. Strip development is a form of residential settlement occurring in a linear path along rights-of-way of roads and highways which often restricts visual and physical access to interior lands. Numerous "curb cuts" providing access to both homes and businesses increase the possibility of automobile accidents from entering and exiting traffic. As development proceeds, the value of these roads as transportation corridors is reduced. Traffic is often impeded, and the cost of snow removal and busing for school children may rise dramatically when secondary roads become settled.

In effect, inefficient utilization of land results from development strung along road networks. Access controls and setback requirements can be effective in controlling this type of growth.

Strip Development Policies

- Important scenic views shall be protected from strip development or other patterns of settlement which would substantially disrupt their scenic values.
- Strip development does not encourage community integrity and results in traffic congestion, excessive use of town roads and hazardous traveling conditions. The number of curb cuts along town highways and roads shall be limited.
- The function which each town highway serves is directly influenced by adjacent settlement patterns. To maintain efficient and safe vehicular movement, settlement must not adversely affect these functions.

Accessibility of Properties

Numerous and uncontrolled accesses along town highways may create hazardous conditions for the safety of the traveling public. They may also result in unwarranted damage by obstructing or diverting the flow of water onto a highway. The Select Board is empowered by Vermont State Law to impose reasonable conditions on any proposed plan for development of land in order to reduce the number of access points required for that project. At their discretion, the Select Board may make such regulations as are necessary to protect and promote the safety of the traveling public but shall in no case deny reasonable ingress and egress to property abutting the roadways.

The municipal costs for provision and maintenance of the town highway system is a substantial share of the town's annual budget. New public roads to land which is not reasonably accessible can significantly increase these costs beyond the revenue generated by new settlement.

Accessibility Policies

- Access to town highways is controlled by the Select Board via their driveway ordinance and by the Planning Commission in Site Plan Review. This policy should be reviewed periodically and kept in force.
- Lands which do not lie within 1/2 mile of a town or state highway, which are presently maintained year-round, are considered to be not reasonably accessible. Roadways providing access to such lands, which might be maintained by the town, shall not be taken over by the town unless evidence is given that sufficient revenue will be generated by the new settlement to provide adequate funds for maintenance of such roads. This policy shall not preclude the construction of roadways of distance greater than 1/2 mile from a town road, providing they are maintained under private ownership.

Subsurface Sewage Disposal

Development has traditionally been limited by the restrictions on individual subsurface sewage disposal systems to treat domestic wastes. The capability of the land to accommodate the proper installation and functioning of these systems so as not to result in a hazard to public health has been a major constraint in Tinmouth. Areas characterized by shallow depth to bedrock, steep slopes, and high water tables have been identified as presenting critical constraints on settlement using subsurface sewage disposal. For areas not presenting critical constraints, the general capability for on-site subsurface disposal of sewage has been identified from an analysis of soil associations and slopes. These areas have been classified and mapped as having slight to moderate, moderate to severe, or severe limitations. The Agency of Natural Resources has universal jurisdiction over sewerage or wastewater and water supplies.

New regulations allow the use of innovative and/or alternative disposal systems. Administration of the regulations is by the State Wastewater Division, and the town has no control over what has been permitted or installed. However, the town should use its control of zoning permits to stay current on approvals by the state.

Commercial Energy Generation and Transmission Facility Siting

The purpose of the Tinmouth Energy Plan is to conduct comprehensive energy planning at the local level while also achieving state energy goals – most importantly, the goal to have renewable energy sources meet 90% of the town's energy needs by 2050. This in-depth energy planning is essential for addressing three crucial issues for the people of Tinmouth: energy security, environmental protection, and economic needs and opportunities. Tinmouth recognizes that as conventional fuel resources dwindle, future resilience relies on lowering dependence on fossil fuels, tapping local energy sources for enhanced self-reliance, and improving efficiency while maintaining a standard of living residents are accustomed to.

VT Energy Goals and Policies (CEP 2016):

- Obtain 90% of energy for all uses from renewable sources by 2050;
- Reduce greenhouse gas emissions to 50% below 1990 levels by 2028 and 75% by 2050;
- Rely on in-state renewable energy sources to supply 35% of energy use by 2025;
- Improve energy efficiency of 25% of homes by 2025;
- Meet the Vermont Renewable Energy Standard through renewable generation and energy transformation.

Tinmouth Energy Goals and Policies:

- Decrease overall energy consumption through conservation and efficiency;
- Reduce reliance on fossil fuels and imported energy sources;
- Develop renewable energy resources locally.

The Town will participate in the Public Utility Commission's review of new and expanded generation facilities as necessary to ensure that local energy, resource conservation, and development objectives are identified and considered in proposed utility development. This may include joint participation in collaboration with other affected municipalities and the Rutland Regional Planning Commission for projects that may have a significant regional impact. Act 56, passed in 2015, gives the host municipality the right to appear as a party in the PUC permitting process. It is acknowledged that the PUC's prime focus is on administering state public policy, not on local land use planning.

This plan has been written to conform with the Energy Planning Standards for Municipal Plans set forth by the Department of Public Service. It has been given an affirmative "determination of energy compliance" by the Rutland Regional Planning Commission and therefore will be given substantial deference in the Public Utility Commission's review of whether an energy project meets the orderly development criterion in the Section 248 process. Specifically, the Commission shall give substantial deference to the land conservation measures and specific policies in this plan. "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.

The State of Vermont has adopted a set of ambitious energy goals through its Comprehensive Energy Plan (CEP), which was updated in 2016. To help communities reach the sustainable energy future envisioned by the CEP, a central goal is to attain 90% renewable energy by 2050.

However, to achieve this goal, the development of new renewable energy sources will not be enough. Since renewable sources yield less energy per unit than fossil fuel-based counterparts, a drastic reduction in overall energy consumption is critical to meeting this target.

A critical facet of improved efficiency will be a greater reliance on electricity to power everyday needs. Since electricity generated from renewable resources and electric-powered technologies such as heat pumps and electric vehicles is highly efficient, switching to electricity will help lower overall energy consumption while at the same time maintaining current lifestyles in **Tinmouth. According to** the 2016 Vermont Comprehensive Energy Plan, significant growth in electricity consumption is expected and 60% of all energy will be supplied through electricity by 2050. Though this major shift in energy use is a formidable challenge, there are opportunities to lower costs and bolster the local economy through a transformation of the energy sector, which costs Tinmouth more than $2.3 million a year or $3,830 per person each year (U.S. Energy Information Administration (EIA) estimates.)

Solar Energy Installation

This energy plan is intended to provide the residents and local leadership of Tinmouth with the information and strategies needed to maintain a vibrant community in coming decades while the energy sector is transformed to better preserve the environment, lower energy costs, promote local renewable energy development, and enhance the town's self-reliance. This plan is based on 2019 technologies that may be replaced by technological innovations in the future.

Current and Future Energy Use

The Rutland Regional Energy Plan (2018) estimates current and future regional energy consumption using a computer modeling program known as LEAP (Long Range Energy Alternatives Planning System) that was developed by the Vermont Energy Investment Corporation. Tinmouth's estimates are based on these projections. The town uses nearly 109 billion BTUs (British Thermal Units) per year and should aim to reduce consumption to about half that or 53 billion BTUs by 2050.

Several charts on the following pages have been produced by LEAP (Long Range Energy Alternatives Planning), an energy modeling program used by state agencies assisting regions and towns. Although the charts represent projections of the use of energy from different sources in great detail, our assumption is that as it unfolds, the actual amounts will vary from these charts as they apply to the Town of Tinmouth. In particular, we suspect that the use of wood for heating will continue and become cleaner. We understand that the LEAP projections are aspirational, more in the nature of "may be possible" than "this shall happen." The production of biodiesel, for example, remains beyond the horizon and awaits the creation and evolution of an industry that sees profit in it, probably outside Vermont. It should also be noted that pure biodiesel fuel contains fewer BTUs than petro diesel and is therefore less efficient. The prime reason for moving to pure biodiesel is that it is cleaner than diesel, producing less greenhouse gas and unhealthy pollutants. It is also renewable and its production is sustainable. Likewise, a greater reliance on electricity will depend on a large increase in the production of electricity – most of it produced outside Tinmouth – and workable pricing, again beyond our control.

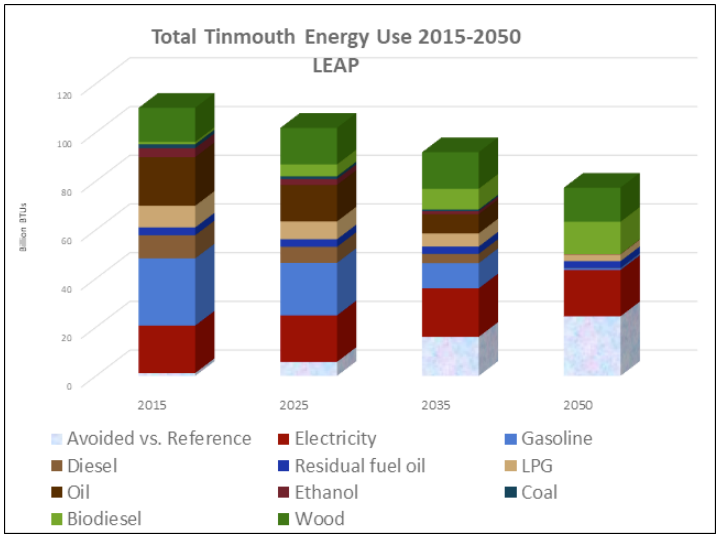
The LEAP projections are based on state- and county-wide perspectives. Tinmouth's share of consumption and production is created by applying the percentage that Tinmouth's population bears to Rutland County. The results may seem unlike Tinmouth as we know it, but no more accurate numbers are available. The "90 by 50" goal is a grand scheme that has many components, some small. Tinmouth is a small town, and our contribution will be small.

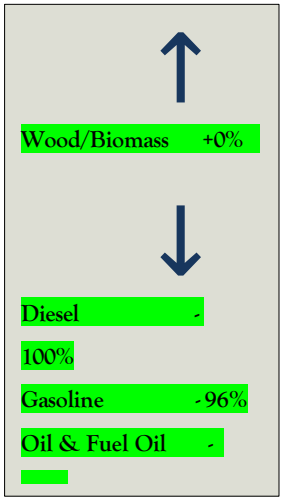
Current Energy Use

Energy use can be grouped into three major sectors: transportation, thermal (heating and cooling) and electricity. Tinmouth's 232 households and 3 commercial entities consume significant amounts of energy for

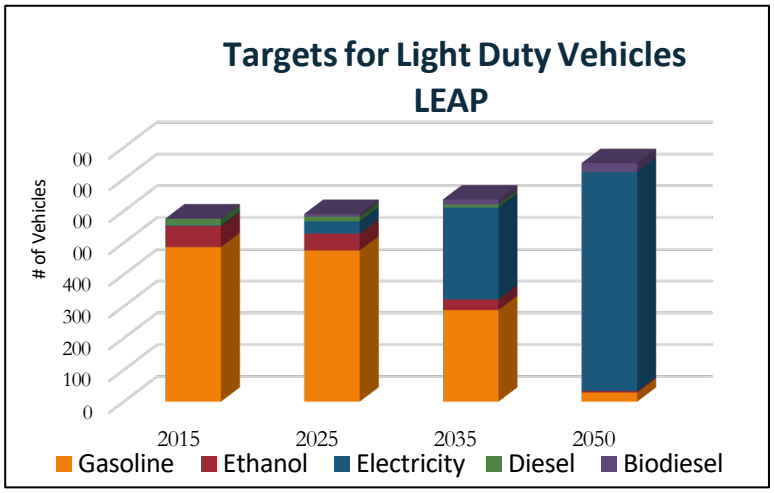
transportation and to power equipment, to heat space and water, and to power lights and appliances with electricity. Tinmouth could see significant savings in energy consumption and costs by adopting conservation strategies, replacing outdated appliances, switching to more efficient technologies, and participating in weatherization programs. By looking at consumption in three sectors – light-duty transportation, residential and commercial heating, and electricity use – a clearer picture emerges about what impact the town can have on overall energy use and in meeting the state's energy goals.

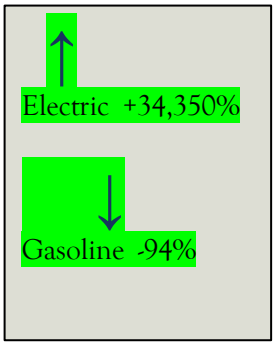
The avoided energy indicates how much weatherization, conservation, and greater efficiency needs to occur if the state is to meet the targets set in the LEAP model.





In Tinmouth, as in other municipalities in Vermont, transportation consumes the most energy of any sector. There are an estimated 478 light-duty vehicles in the town traveling 6 million miles a year - at a cost of more than $709 thousand a year and at a consumption rate of 37 billion BTUs. In Tinmouth, an average of $1,157 a year per capita is spent on gasoline. Of the 306 residents in the labor force, 242 (or 79%) drive to work alone.
In the next few decades, total fossil fuel use for transportation will fall gradually to about 35% of current levels for light-duty vehicles. The efficiencies of electrification and a switch to biodiesel will account for





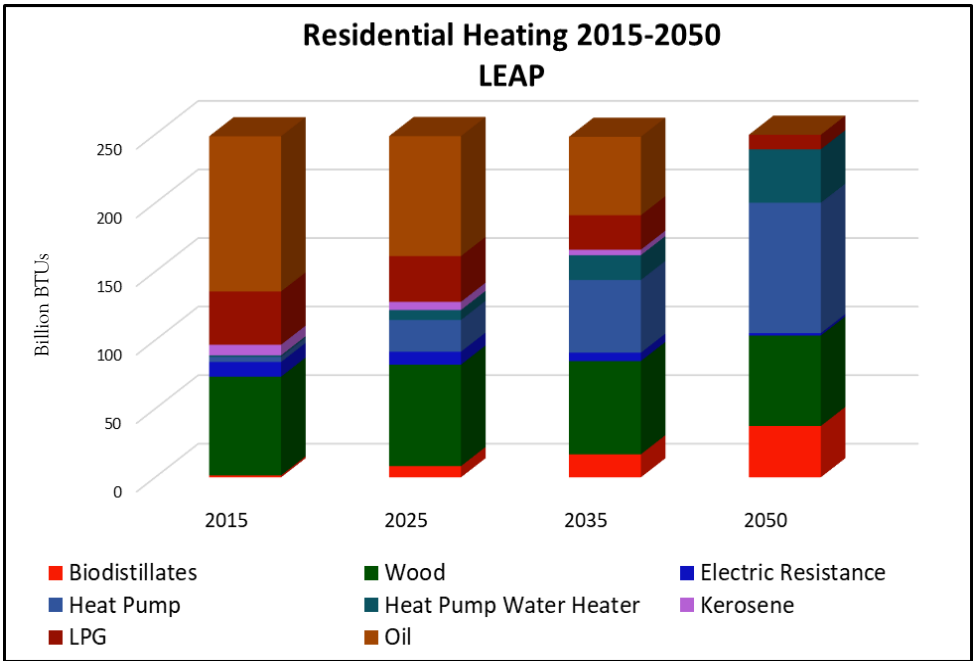
much of this reduction. By 2050, electric vehicles are estimated to comprise more than 90% of the light-duty fleet in Tinmouth. It is expected that by 2050, there will be 689 electric light-duty vehicles in the town, up from 39 in 2025 and 290 in 2035. This represents less than 7% of the fleet of light-duty vehicles in 2025; 46% in 2035; and 92% in 2050.

Residential and Commercial Energy Use

For the seven-month heating season, more than 41% of Tinmouth homes are heated with oil or propane; 48% heat with wood. Even though there is a high percentage of households heating with wood, LEAP suggests that wood may help us get away from use of oil and propane. Solar hot water is an effective, affordable, and direct method of displacing fossil fuels with renewable energy

Current Tinmouth Residential Heating Energy Use (American Community Survey [ACS], US Census, 2011-2015)

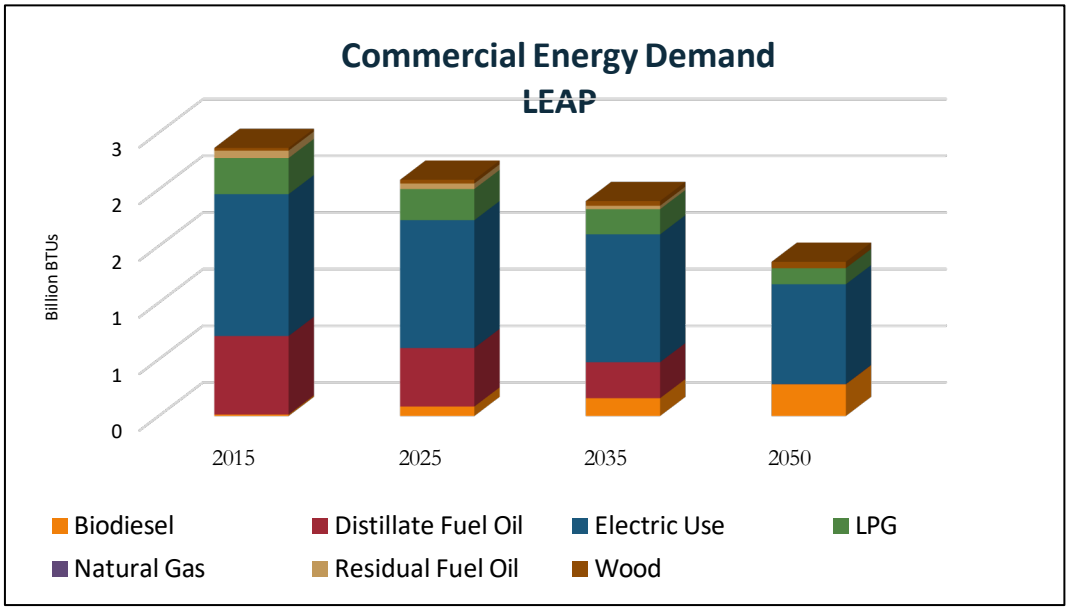
Fuel	# of Households	% of Households	BTUs (in billions)
Natural Gas	0	0%	0
Propane	28	10.6%	3
Electricity	7	2.7%	1
Fuel Oil	81	30.7%	8
Coal	21	8%	2
Wood	127	48.1%	13
Solar	0	0%	0
Other	0	0%	1
No Fuel	0	0%	0
Total	**232**	**100.0%**	**25**

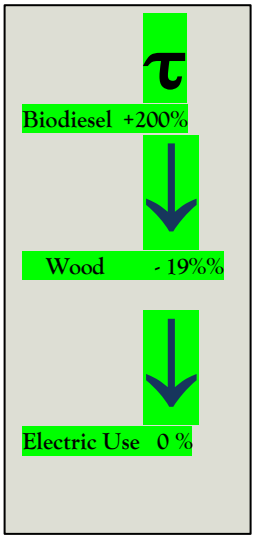


Conservation

LEAP modeling shows how Tinmouth can conserve energy by transitioning to renewable energy sources for both residential and commercial structures through the increased use electricity. The use of fuel oil for heating drops precipitously in this modeling.

Currently there are an estimated 3 commercial establishments using about one Billion BTUs of thermal energy use per establishment for a total of 2 billion BTUs a year in Tinmouth. Energy use is projected to decrease due to less use of fossil fuels and a heavier reliance on more efficient renewable sources. Due to efficiencies, overall energy use declines, but as a percentage of overall energy use electricity increases by 2050.





By switching fuels and relying on efficient heat pumps systems for both residential and commercial, the town's target is 26 units by 2025; 66 by 2035; and 129 by 2050.
The projected growth in the percentage of heating energy use coming from renewable sources is sharp: rising from 46% in 2025 to 93% in 2050.

Efficiency

Tinmouth is committed to meeting its residential and commercial thermal targets through increased conservation. The percentage of Tinmouth households that will need to be weatherized between now and 2050 to meet the state's goals is: 14% by 2025; 39% by 2035; and 85% by 2050. For commercial structures, weatherization targets are 29% by 2025; 47% by 2035; and 84% by 2050.

Electricity

Electricity is the third major sector of energy use so reducing usage and converting to renewable sources is critical to meeting the state's energy goals. Although electricity use will increase dramatically in the future since it is a conduit for making local renewable energy sources available for use, widespread adoption of efficient appliances, vehicles and thermal technologies powered by electricity is critical to achieving the state's energy goals for efficiency.

Tinmouth KWh Usage by Year (Efficiency Vermont)

Sector	2014	2015	2016
Commercial & Industrial	220,171	225,013	236,753
Residential	2,265,352	2,340,474	2,342,668
Total	**2,485,523**	**2,565,488**	**2,579,421**
Average Residential Usage	**6,547**	**6,804**	**6,751**

Data also show that overall electrical use in the town is affected by electric efficiencies. Additional figures from Efficiency Vermont indicate that the town is seeing electric savings from efficiency measures, particularly in the residential sectors.

Further electricity efficiency savings are included in the LEAP modeling. The town's targets are 12.1% by 2025; 39% by 2035; and 69.8% by 2050.

Tinmouth is committed to energy conservation and will take advantage of Efficiency Vermont initiatives to upgrade the insulation of home and buildings to reduce heating and cooling energy consumption. The town has led by example by ensuring all municipal buildings, including the Town Office, fire station, town garage, and school, have been audited for energy use and upgraded. Tinmouth will reduce municipal electricity use by installing renewable energy sources whenever feasible.

Data Sources

Data for the previous analyses comes the following sources:

Efficiency Vermont, 2016
LEAP (Long-range Energy Alternatives Planning, 2017
U.S. Census American Community Survey (ACS), 2011-2015
U.S. Energy Information Administration, 2017
Vermont Department of Labor, 2016
Vermont Department of Public Service, 2017
VTrans (Vermont Department of Transportation, 2016
Vermont Community Energy Dashboard, Energy Action Network, 2017

Renewable Energy Sources Resource Maps

The four resource maps described on the following pages locate wind, solar, hydro and biomass resources identified by various state agencies. They consider various conditions, such as ecological zones that may impact the feasibility of renewable energy development. These conditions are identified by the Public Service Department as Known and Possible Constraints in the maps' legends. Known constraints (listed on page 16) have been removed from the raw resource potential mapping layers. Known and Possible constraints are listed in the section (below) on Siting Renewable Energy.

Readers of this plan who would like to view maps in color or at a larger scale can view them at the Tinmouth Town web page https://www.tinmouthvt.org/ under Resources, Town Documents, Town Plan. This is a PDF file that can be opened, zoomed and downloaded.

These maps are good indicators but not definitive siting tools. They are based on the best data available at the time of the map production.

Wind Resource Areas Map (page 69)

-Areas where there is likely to be sufficient wind at a specified height for industrial scale wind energy development.

The mapping analysis used digital wind speed at various heights (30, 50, and 70 meters) and identified areas with the highest wind speeds at each of those heights. The mapping also considers various other conditions, such as ecological zones that may impact the feasibility of renewable energy development. The strongest wind resources are generally located at higher elevations and that is where the state's utility-scale installations are located. But Vermont does have nearly 200 small-scale wind projects ranging from 0.95 kW to 100 kW of generating capacity.

View from Gulf Road

In keeping with the Rutland Regional Plan, Tinmouth has decided not to include industrial scale wind (greater than 1 MW) in its renewable energy generation targets. Few of the prime wind areas identified on the wind resource map could accommodate industrial scale wind; most of the wind resources identified are secondary and *may not be suitable for energy development*. Instead of industrial-scale wind, the Town of Tinmouth envisions residential scale and commercial scale turbines or windmills in areas throughout the town. Residential or commercial scale wind generation is referred to as **Distributed Wind.** Small Distributed Wind turbines can range from 1kW to 100kW (located at homes and farms).

Due to anticipated technological advances, small scale wind generation is projected to be feasible throughout most of the town at lower elevations in coming decades. It is town policy that the areas identified on the wind resource map as resource areas for primarily industrial scale wind shall be designated as unsuitable given their valuable natural resource values and scenic resources values that limit other development.

Solar Resource Areas Map (page 70)

Areas where there is likely to be sufficient solar radiation for solar energy development (solar photovoltaic)

The GIS-based analysis factored in direction, slope and location of land to map areas with high solar radiation potential. Certain areas where development was not possible – such as rivers and roads – were removed. The mapping also considers various other conditions, such as ecological zones that may impact the feasibility of renewable energy development. These conditions are known as constraints.

Community solar is a solar PV generation system that provides electricity, net metering, and return on investment to multiple participants. A community solar project — referred to as a solar farm, garden, shared renewable energy plant, or microgrid — is a solar power plant whose electricity is shared by more than one household. Instead of installing panels on rooftops, these are ground-mounted solar projects. Participants subscribe to a portion of the energy produced in the community solar project, along with other residents (or investors). It could be a viable option for some of Tinmouth's neighborhoods.

Screening, Fencing and Setbacks

While the preferred screening is vegetation already in place, commercial solar facilities larger than 15 kW shall be screened from roads and adjacent property with native evergreen trees placed inside the required setback. Dead or dying trees shall be replaced promptly by the owner of the array. If not, the Town of Tinmouth shall have the right to enter onto the property to plant replacement trees. The owner of the array shall be responsible for the cost of the trees, the time and usage charges for town personnel and equipment, and costs of any contracted work. The Tinmouth Planning commission shall review the plans for any array over 15KW. If it determines that more screening, such as higher trees, or less screening is required, the applicant shall make appropriate changes in its plans and construction activities. Solar arrays must not produce glare visible from roadways or neighboring properties.
To keep wildlife corridors open, fencing is not always required. There is precedent in Vermont for non-fenced solar arrays; the posts supporting solar panels are specially protected so that they are not safety hazards. Ground-mounted solar arrays sited in Tinmouth shall not be fenced.

Tinmouth endorses the minimum setbacks required for ground-mounted solar generation facilities as enumerated in 30 VSA §248(s). See below:

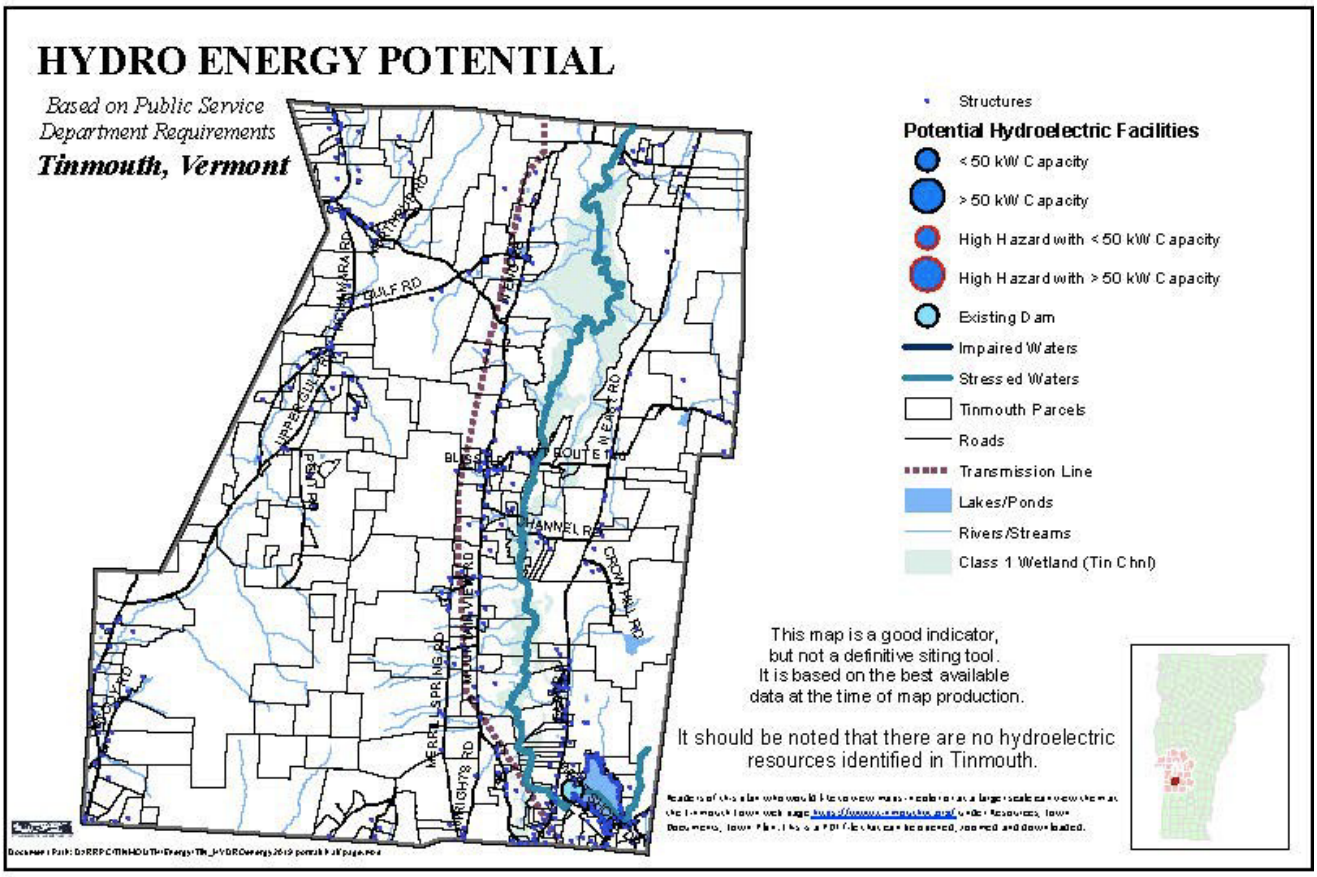
Minimum Setbacks for Solar	
From a state or municipal highway	100 feet for capacity exceeding 150 kW; 40 feet for capacity between 15 and 150 kW
From each property boundary that is not a state or municipal highway	50 feet for capacity exceeding 150 kW; 25 feet for capacity between 15 and 150 kW

Tinmouth is projecting to help meet its renewable energy generation target with mostly non-utility and non-Standard Offer Program scale solar (≤ 500 kW). Because of the rapid pace of technological advances in the field of PV solar, it is expected that residential, commercial and industrial scale projects will dominate the region's solar generation by 2050. Solar generation facilities of a capacity less than 150 kW are highly encouraged throughout the town.

Hydro Resource Areas Map (below)

-Areas where there is likely to be capacity to accommodate hydroelectric energy development.

The mapping shows areas of potential electricity generation from hydro; locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. Existing, powered and existing non-powered dam sites where a generator could be installed or existing hydropower sites where equipment could be upgraded or expanded to provide additional generation (with potential production) were mapped.

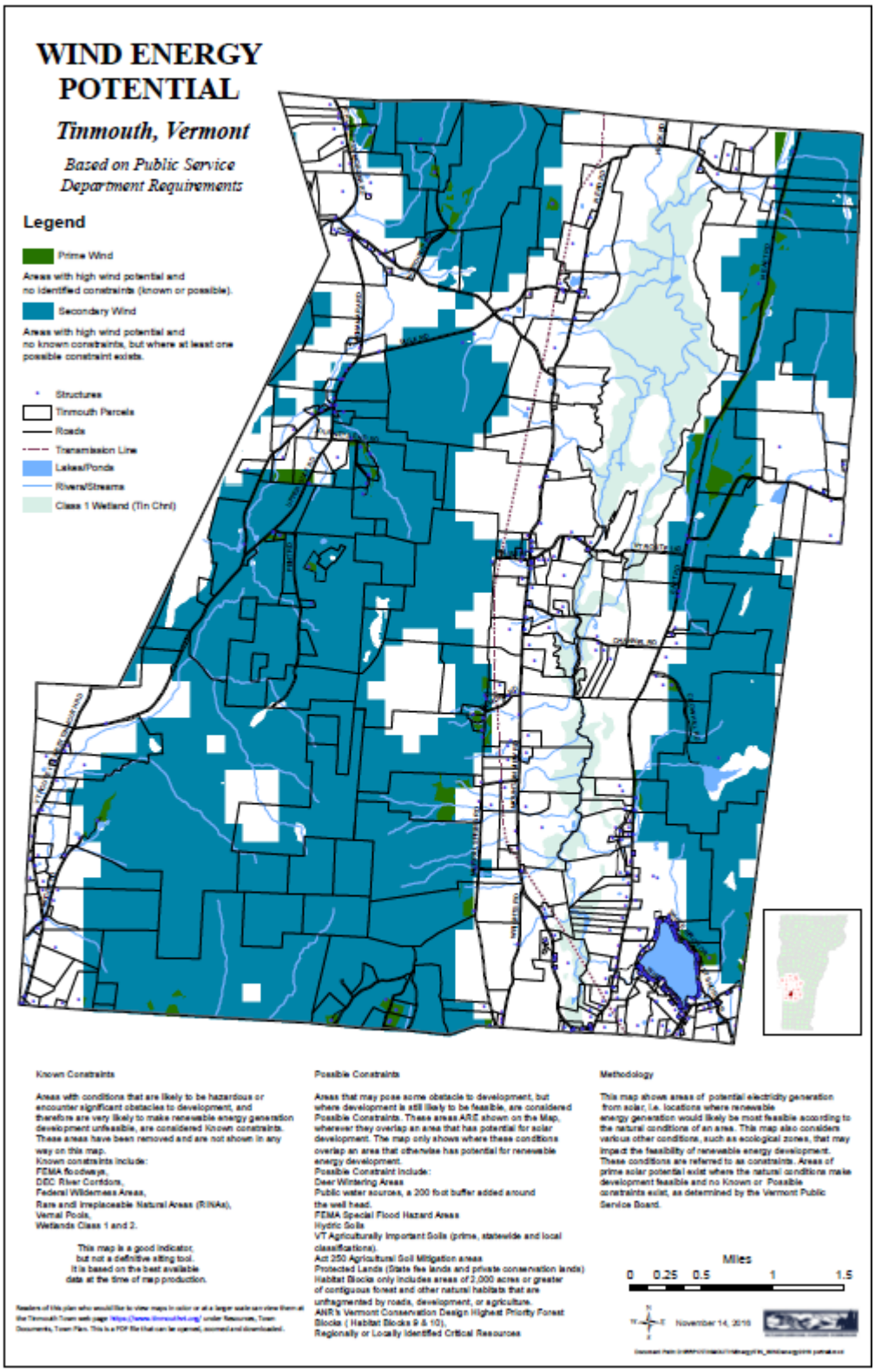


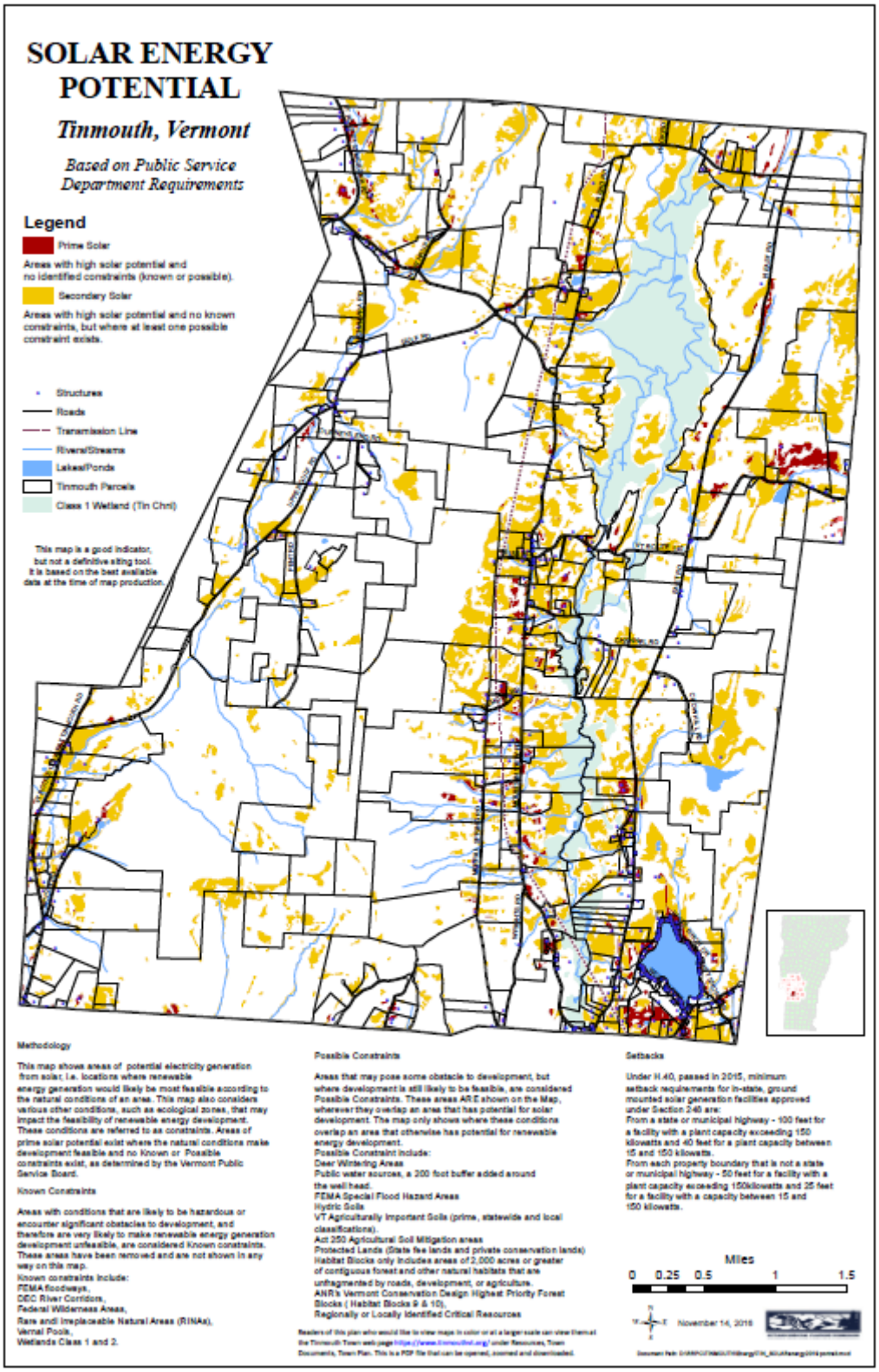
<u>It should be noted that there are no hydroelectric resources identified in Tinmouth.</u>

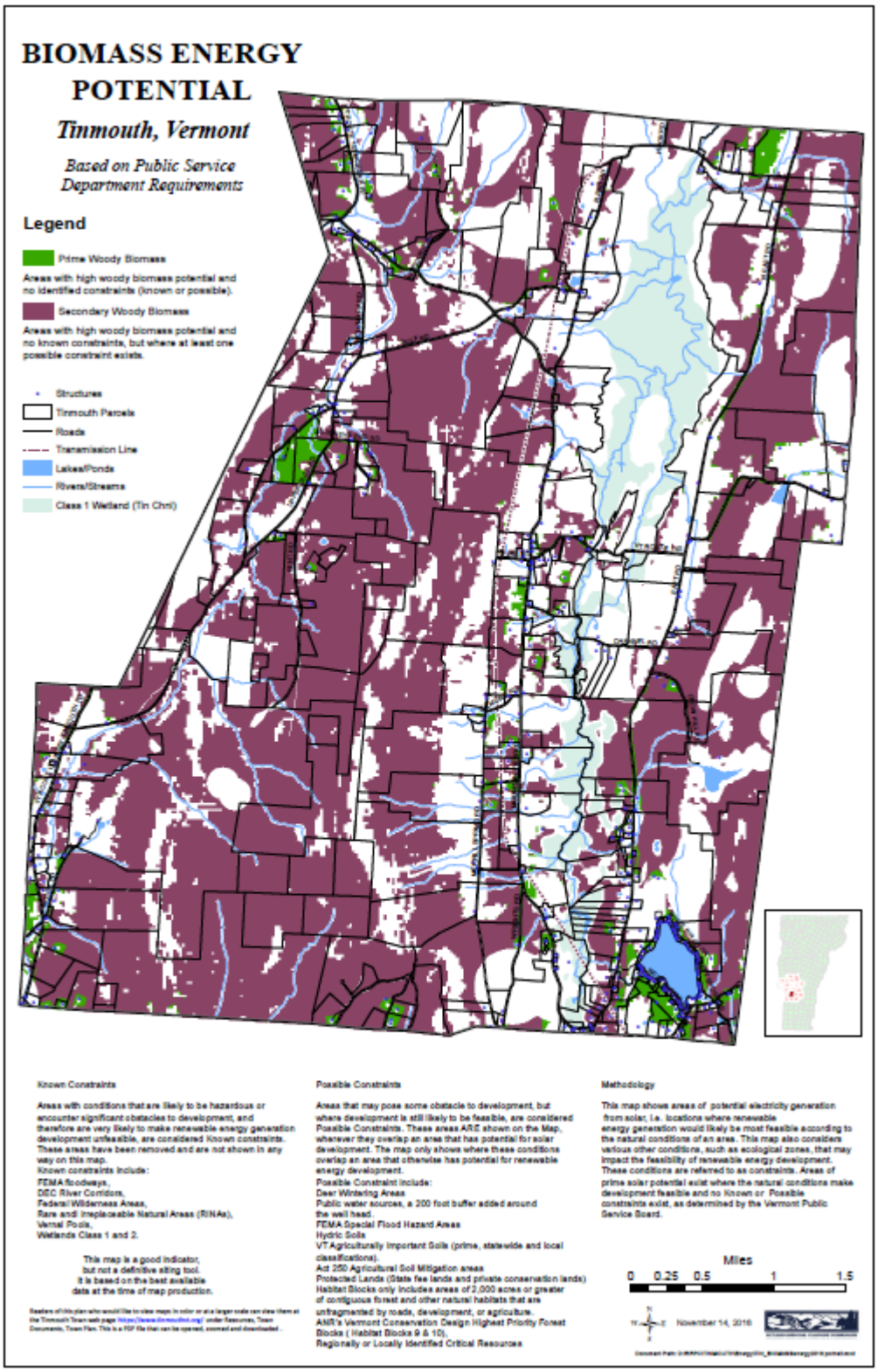
Biomass Resource Areas Map (page 71)

Areas where there are likely to be efficient biomass resources for biomass energy development.

The mapping shows areas of potential electricity generation from biomass totaling 9,624 acres of prime and secondary biomass resource – locations with high woody biomass potential and where renewable energy generation would likely be most feasible according to the natural conditions of an area. Any industrial scale project shall operate under sustainable harvest guidelines as defined by the Vermont Department of Forests, Parks and Recreation.


WIND ENERGY POTENTIAL
Tinmouth, Vermont
Based on Public Service Department Requirements
Legend
Prime Wind
Areas with high wind potential and no identified constraints (known or possible).
Secondary Wind
Areas with high wind potential and no known constraints, but where at least one possible constraint exists.
Structures
Tinmouth Parcels
Roads
Transmission Line
Lakes/Ponds
Rivers/Streams
Class 1 Wetland (Tin Chnl)
Known Constraints
Areas with conditions that are likely to be hazardous or encounter significant obstacles to development, and therefore are very likely to make renewable energy generation development unfeasible, are considered Known constraints. These areas have been removed and are not shown in any way on this map.
Known constraints include:
FEMA floodways,
DEC River Corridors,
Federal Wilderness Areas,
Rare and Irreplaceable Natural Areas (RINAs),
Vernal Pools,
Wetlands Class 1 and 2.
This map is a good indicator, but not a definitive siting tool. It is based on the best available data at the time of map production.
Readers of this plan who would like to view maps in color or at a larger scale can view them at the Tinmouth Town web page https://www.tinmouthvt.org/ under Resources, Town Documents, Town Plan. This is a PDF file that can be opened, zoomed and downloaded.
Possible Constraints
Areas that may pose some obstacle to development, but where development is still likely to be feasible, are considered Possible Constraints. These areas ARE shown on the Map, wherever they overlap an area that has potential for solar development. The map only shows where these conditions overlap an area that otherwise has potential for renewable energy development.
Possible Constraint include:
Deer Wintering Areas
Public water sources, a 200 foot buffer added around the well head.
FEMA Special Flood Hazard Areas
Hydric Soils
VT Agriculturally Important Soils (prime, statewide and local classifications).
Act 250 Agricultural Soil Mitigation areas
Protected Lands (State fee lands and private conservation lands)
Habitat Blocks only includes areas of 2,000 acres or greater of contiguous forest and other natural habitats that are unfragmented by roads, development, or agriculture.
ANR's Vermont Conservation Design Highest Priority Forest Blocks (Habitat Blocks 9 & 10),
Regionally or Locally Identified Critical Resources
Methodology
This map shows areas of potential electricity generation from solar, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints. Areas of prime solar potential exist where the natural conditions make development feasible and no Known or Possible constraints exist, as determined by the Vermont Public Service Board.
Miles
0 0.25 0.5 1 1.5
November 14, 2016


SOLAR ENERGY POTENTIAL
Tinmouth, Vermont
Based on Public Service Department Requirements
Legend
Prime Solar
Areas with high solar potential and no identified constraints (known or possible).
Secondary Solar
Areas with high solar potential and no known constraints, but where at least one possible constraint exists.
Structures
Roads
Transmission Line
Rivers/Streams
Lakes/Ponds
Tinmouth Parcels
Class 1 Wetland (Tin Chn)
This map is a good indicator, but not a definitive siting tool. It is based on the best available data at the time of map production.
Methodology
This map shows areas of potential electricity generation from solar, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints. Areas of prime solar potential exist where the natural conditions make development feasible and no Known or Possible constraints exist, as determined by the Vermont Public Service Board.
Known Constraints
Areas with conditions that are likely to be hazardous or encounter significant obstacles to development, and therefore are very likely to make renewable energy generation development unfeasible, are considered Known constraints. These areas have been removed and are not shown in any way on this map.
Known constraints include:
FEMA floodways,
DEC River Corridors,
Federal Wilderness Areas,
Rare and Irreplaceable Natural Areas (RINAs),
Vernal Pools,
Wetlands Class 1 and 2.
Possible Constraints
Areas that may pose some obstacle to development, but where development is still likely to be feasible, are considered Possible Constraints. These areas ARE shown on the Map, wherever they overlap an area that has potential for solar development. The map only shows where these conditions overlap an area that otherwise has potential for renewable energy development.
Possible Constraint include:
Deer Wintering Areas
Public water sources, a 200 foot buffer added around the well head.
FEMA Special Flood Hazard Areas
Hydric Soils
VT Agriculturally Important Soils (prime, statewide and local classifications).
Act 250 Agricultural Soil Mitigation areas
Protected Lands (State fee lands and private conservation lands)
Habitat Blocks only includes areas of 2,000 acres or greater of contiguous forest and other natural habitats that are unfragmented by roads, development, or agriculture.
ANR's Vermont Conservation Design Highest Priority Forest Blocks (Habitat Blocks 9 & 10).
Regionally or Locally Identified Critical Resources
Readers of this plan who would like to view maps in color or at a larger scale can view them at the Tinmouth Town web page https://www.tinmouthvt.org/ under Resources, Town Documents, Town Plan. This is a PDF file that can be opened, zoomed and downloaded.
Setbacks
Under H.40, passed in 2015, minimum setback requirements for in-state, ground mounted solar generation facilities approved under Section 248 are:
From a state or municipal highway - 100 feet for a facility with a plant capacity exceeding 150 kilowatts and 40 feet for a plant capacity between 15 and 150 kilowatts.
From each property boundary that is not a state or municipal highway - 50 feet for a facility with a plant capacity exceeding 150kilowatts and 25 feet for a facility with a capacity between 15 and 150 kilowatts.
Miles
0 0.25 0.5 1 1.5
November 14, 2016


BIOMASS ENERGY POTENTIAL
Tinmouth, Vermont
Based on Public Service Department Requirements
Legend
Prime Woody Biomass
Areas with high woody biomass potential and no identified constraints (known or possible).
Secondary Woody Biomass
Areas with high woody biomass potential and no known constraints, but where at least one possible constraint exists.
Structures
Tinmouth Parcels
Roads
Transmission Line
Lakes/Ponds
Rivers/Streams
Class 1 Wetland (Tin Chnl)
Known Constraints
Areas with conditions that are likely to be hazardous or encounter significant obstacles to development, and therefore are very likely to make renewable energy generation development unfeasible, are considered Known constraints. These areas have been removed and are not shown in any way on this map.
Known constraints include:
FEMA floodways,
DEC River Corridors,
Federal Wilderness Areas,
Rare and Irreplaceable Natural Areas (RINAs),
Vernal Pools,
Wetlands Class 1 and 2.
This map is a good indicator, but not a definitive siting tool. It is based on the best available data at the time of map production.
Possible Constraints
Areas that may pose some obstacle to development, but where development is still likely to be feasible, are considered Possible Constraints. These areas ARE shown on the Map, wherever they overlap an area that has potential for solar development. The map only shows where these conditions overlap an area that otherwise has potential for renewable energy development.
Possible Constraint include:
Deer Wintering Areas
Public water sources, a 200 foot buffer added around the well head.
FEMA Special Flood Hazard Areas
Hydric Soils
VT Agriculturally Important Soils (prime, statewide and local classifications).
Act 250 Agricultural Soil Mitigation areas
Protected Lands (State fee lands and private conservation lands)
Habitat Blocks only includes areas of 2,000 acres or greater of contiguous forest and other natural habitats that are unfragmented by roads, development, or agriculture.
ANR's Vermont Conservation Design Highest Priority Forest Blocks (Habitat Blocks 9 & 10).
Regionally or Locally Identified Critical Resources
Methodology
This map shows areas of potential electricity generation from solar, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints. Areas of prime solar potential exist where the natural conditions make development feasible and no Known or Possible constraints exist, as determined by the Vermont Public Service Board.
Miles
0 0.25 0.5 1 1.5
November 14, 2016

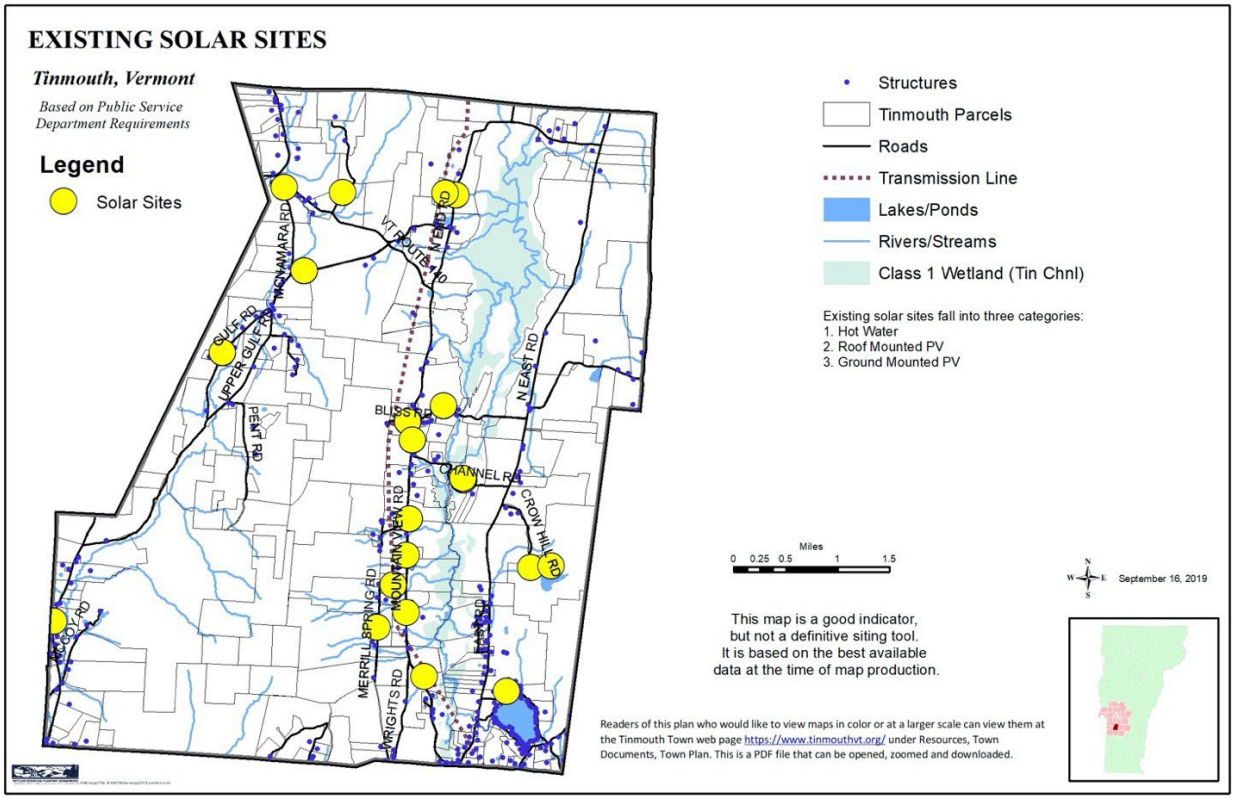
Existing Renewable Energy Generation and GMP Grid Infrastructure (map below)

Sites where there are already renewable energy generation in the town and current Green Mountain Power grid capacity for more energy development

This map is based on data in the Vermont Energy Action Network (VEAN) Community Energy Dashboard which reflects all renewable projects that have received Certificates of Public Good.

As of this year, 2019, Tinmouth has 0.1 MW of total renewable energy generation. The data in this table are based on information available from the Vermont Department of Public Service and the Vermont Community Energy Dashboard. All of the town's renewable energy comes from its 19 solar sites.

Renewable Type	MW	MWh
Solar	0.1	115
Wind	0	0
Hydro	0	0
Biomass	0	0
Other	0	0
Total Existing Generation	**0.1**	**115**



Siting Renewable Energy Generation in Tinmouth:

Here is the estimated renewable energy generation potential for the town. These data were based on mapping completed by the Rutland Regional Planning Commission (RRPC) and are based on the Municipal Determination Standards and associated guidance documents developed by the Vermont Department of Public Service:

Renewable Type	MW	MWh
Rooftop Solar *	1	1300
Ground-Mounted Solar *	366	475,800
Wind (small scale)	2,343	4,686,480
Hydro	0	0
Biomass & Methane	0	0
Other	0	0
Total Renewable Generation Potential	2,710	5,163,100

RRPC has suggested the following targets (in MWh) for Tinmouth for total renewable energy generation to meet the state's 90x50 renewables goal. The target of 14,369 MWh by 2050 is a fraction of the town's generation potential of 5,163,500 MWh.

2025	2035	2050 :
1,585 MWh	4,742 MWh	14,369 MWh

According to estimates by the RRPC, Tinmouth has sufficient land to reach 2050 targets for solar and wind based on the renewable generation potential in the town. For solar alone, there are 326 acres of prime solar which at 8 acres per MW equates to 52,975 MWh of generation potential (326 ÷ 8 = 40.75MW x 1,300 Hrs. = 52,975). The potential for energy generation is more than enough to meet the town's target. We anticipate the development of a variety of solar collectors and technology that will increase the overall efficiency of overall generation, requiring less area. Even though the Tinmouth has 9,373 acres identified as wind resources, developing these lands will not be needed to meet generation targets.

The Tinmouth Energy Plan allows for the siting of all types of renewable generation resources – wind, solar, and biomass energy generation – but not necessarily all scales of a given technology. There are no identified hydro resources. The town is certain that, if applied regionally, this is a fair and equitable approach that follows town and state priorities and still allows for sufficient land area to meet the town's and Vermont's energy targets and goals. Tinmouth will reduce fossil fuel energy use by utilizing renewable energy sources whenever feasible.

Another key element of the Resource Maps is the location of electric grid infrastructure, including three-phase and other high-capacity distribution lines. These are shown on each of the resource maps as well as the Existing Energy, Local Constraints and Solar Potential Areas maps. The three-phase line running down the center of town is a GMP transmission line serving only the Danby quarry. For this reason, at this time it is not suitable for connecting electric generation facilities. Green Mountain Power's "Solar Map"[1] shows the specific capacity of each section of the utility's grid. On this map, Tinmouth displays all orange lines, with the following legend: "Due to system limitations, interconnections on this circuit may experience higher costs and delayed interconnections."

Community Standards

The following five community standards are to be considered (a) in undertaking Town owned electrical generating projects and programs, (b) in updating the Tinmouth Zoning Regulations and subdivision regulations to address commercial electricity generation and transmission development, to the extent they are subject to local regulation, and (c) in the review of new or upgraded commercial electricity generation facilities and systems by the Town of Tinmouth and the Public Utilities Commission (Section 248 review):

1. Plan Conformance: New commercial, utility-scale electricity generation facilities and proposed system upgrades, should be identified in or be consistent with the Vermont Comprehensive Energy Plan, the Vermont Long-Range Transmission Plan, and utilities' Integrated Resource Planning (IRP) ("commercial solar facilities").
2. Alternatives Analysis. Tinmouth is happy to participate, within limits, in supplying electricity for local needs. Its rural, agricultural nature is inconsistent with industrialization, such as large-scale solar arrays and wind farms not serving local needs but selling electricity on the open market (merchant

[1] https://www.arcgis.com/apps/webappviewer/index.html?id=4eaec2b58c4c4820b24c408a95ee8956

facilities). A new commercial electrical facility should be considered only after potential alternatives, including increased energy efficiency, distributed energy systems, and existing facility upgrades are evaluated and found to be insufficient to meet system reliability needs or projected demand in Vermont. Commercial electrical facilities in Tinmouth should serve local needs; if they are grid-tied, the power should be sold to users within the state of Vermont. Local utility-owned facilities are preferred to merchant facilities. Renewable energy credits should not be sold outside Vermont.

3. Benefits: For the town of Tinmouth to support establishment of utility scale commercial solar array, there shall be a demonstrated local public need that outweighs adverse impacts to local residents and resources. Facility development must benefit town residents, businesses, and property owners in direct relation and proportion to the impacts of the proposed development, and should not impede orderly development of the town consistent with this Plan.
4. Impacts: New generation, transmission and distribution facilities must be evaluated for consistency with community and regional development objectives and avoid undue adverse impacts to significant cultural, natural and scenic resources identified by the community.
5. Decommissioning: All facility certificates or impact statements shall specify conditions for system abandonment and decommissioning, including required sureties for facility removal and site restoration to a safe, useful, and environmentally stable condition. All hazardous materials and structures, including foundations, pads and accessory structures including underground cables, must be removed from the site. Development shall be accomplished in such a way that it does not compromise the future agricultural value of the site. Decommissioning funds alone, though essential, are not a substitute for design that will allow the land to revert to agriculture when the facility is removed. Projects falling under 30 V.S.A. §248 shall also meet the decommissioning requirements set forth in Rule 5.900 of the Vermont Public Utilities Commission, effective August 15, 2017 or any subsequent revisions of that rule.

Scenic Resources

The first element of the Vision of the Town of Tinmouth (page 3 of the Town Plan, above) states that "Tinmouth residents hope to maintain the rural aspects of the town including active, productive farms, open meadows, substantial forests, and scenic mountain vistas." The ten objectives listed there include:

- Preserve the rural character of Tinmouth.
- Protect and preserve scenic and historic features, open spaces, fragile and wildlife habitats and other natural resources.
- Prohibit incompatible and uncoordinated development activity.
- Require that public utilities be located in such a way that they will not have an undue adverse effect on the scenic quality and land values of the town.
- Of particular scenic concern listed under unsuitable areas, page 17, are the open lands at the entrances to the town: lands bordering Vt. Rte. 140 between the Wallingford town line and Ballou's swamp and lands at the junction of Rte. 140 and Rte. 133. Also lands at the junction of Rte. 140 and Gulf Road and open fields visible from the intersection of Vt. 140 and East Road, the agricultural heart of the Tinmouth Valley.

These areas offer commanding views of open fields, the Green Mountains to the east and north, and the Taconic Mountains to the west as well as Tinmouth Mountain itself. There shall be no renewable energy development visible from these designated scenic areas. If renewable energy generation development is proposed in these scenic resource areas, they shall have an aesthetic impact analysis completed by a certified landscape professional chosen by the Town, working with the Planning Commission, and paid for by the developer. This analysis will determine whether a proposed generation project will have an

undue adverse effect on aesthetics, historic sites, air and water quality, the natural environment, the use of natural resources, and public health and safety.

At this point, without a more detailed aesthetics analysis of the town's Scenic Resources, it is not possible to estimate exactly how future energy development would be affected, if at all, since it is not known whether renewable resources exist in these areas. This will be determined on a site-specific basis if and when developers propose energy projects at these locations.

Preferred Areas

New commercial solar facilities and transmission facilities shall be sited in locations that reinforce the community's traditional and planned patterns of development, which is of a countryside that includes large amounts of working farm and forest land and scattered homes on large lots. As mentioned earlier in this plan, solar generation facilities with a capacity of less than 150 kW are highly encouraged throughout Tinmouth, especially on residential and commercial rooftops.

The following areas have been identified as suitable for the development of larger, utility-scale commercial solar electricity generation and transmission facilities (150 kW or greater), consistent with this pattern of development:

- Roofs of residential, agricultural, and municipal buildings;
- Disturbed areas such as gravel or sand pits;
- Sealed and sanitary landfills and former quarries and mineral extraction sites;
- Parking lot canopies over paved parking lots;
- Sites where existing hedgerows, hills, or other topographical features naturally screen the proposed array from view by neighbors and by the public on main highways;
- Sites where facilities can be clustered at the edge of timber stands and in previously disturbed areas, such as gravel pits, closed landfills, or former quarries. Clear-cutting forest areas for commercial solar arrays is inconsistent with the nature of the Town of Tinmouth and shall not be allowed.
- Solar facilities in working agricultural areas may be feasible, but shall be located on the least productive portions.
- Locations that have existing natural vegetation to meet screening requirements, or can accommodate the planting requirements set forth below.

Constraints

Electricity generation and transmission systems powered by renewable energy are regulated by the Public Utility Commission (PUC) under 30 V.S.A. Section 248. As part of that process, the PUC must determine whether a proposed energy facility will have an *undue adverse effect* on aesthetics, historic sites, air and water purity, the natural environment, the use of natural resources, and the public health and safety, with due consideration having been given to the criteria specified in 10 V.S.A. § 1424a(d) (outstanding resource waters) and the Act 250 criteria set forth in 10 V.S.A. §6086(a)(1) through (8) and 9(K).

§248(b) (5), PUC Rule 5.108(A) requires the PUC to conduct the so-called "Quechee analysis" to assess whether a proposed renewable energy project would have an adverse impact by virtue of being "out of character with its surroundings," and if so, whether the adverse impact qualifies as "undue." A project's location, size, and visibility, together with the context of the surrounding land uses, will be relevant in the PUC's consideration of whether the proposed project would have an undue adverse impact. Among other things, the Quechee analysis requires the PUC to consider whether the proposed project would violate a

"clear written community standard." Specific community standards for scenic resources have been part of the town's Municipal Plan since November 2016 (standards #' 3 and 4, above).

Known Constraints

-High priority constraints that limit where energy can be generated as identified by the Department of Public Service and other state departments. Energy generation facilities are not very likely to be developed in Known Constraints areas due to the presence of natural resources that are regulated at the federal, state or local level. Accordingly, lands under these constraints have been removed from the raw resource potential mapping layers. Site-specific study is required to ascertain whether one of the mapped constraints truly exists on the site and some sites not captured by the Known Constraints mapping may have such high-priority constraints, depending on the results of site-specific study. The maps are good indicators, but not definitive siting tools.

Included:

- Vernal Pools
- DEC River Corridors (= Fluvial erosion)
- FEMA Floodway
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- National Wilderness Areas
- Class 1 and Class 2 Wetlands

Possible Constraints

-Lower priority constraints that may limit where energy can be generated, as identified by the Department of Public Service. Possible constraints can impact the siting process for generation facilities, should always be considered in planning for these facilities, but do not necessarily preclude placement in corresponding areas. Site-specific solutions are often possible when one of these conditions exists. Site-specific study is required to ascertain whether one of the mapped constraints truly exists on the site and some sites not captured by the Possible Constraints mapping may have such lower priority constraints, depending on the results of site-specific study. The maps are good indicators, but not definitive siting tools.

Included but not limited to:

- Agricultural soils (prime farmland, additional farmland of statewide importance, and additional farmland of local importance)
- FEMA Special Flood Hazard Areas
- Protected Lands (State fee lands and private conservation lands)
- Act 250 Agricultural Soil Mitigation Areas
- Deer Wintering Areas
- ANR's Vermont Conservation Design Highest Priority Forest Blocks (Habitat Blocks 9 & 10)
- Hydric Soils

Local Possible Constraints on Commercial Renewable Energy Production (page 20)

Shown on this map are the main areas where the Town of Tinmouth discourages commercial renewable energy generation, including:

- Habitat blocks 9 and 10
- Lands in Current Use must be removed from Current Use taxation before beginning construction of the transmission lines on or off site, or the arrays themselves.
- Lakeshore District, Ridgeline Overlay District, Conservation District, Protection District, Flood Hazard District

- Agricultural Overlay District
- Wellhead Protection Area whether or not the state standards permit the development as a conditional use.

- Any location that requires fragmentation of Tinmouth's working landscape, including undeveloped forestland, open farmland in operation, and primary agricultural soils (as mapped by the U.S. Natural Resource Conservation Service. Solar array development should not compromise the future agricultural value of the site. Clear-cutting forest areas for commercial solar arrays is wholly inconsistent with the nature of the Town of Tinmouth, and is prohibited. Clearing forested land for solar arrays is limited to tracts of less than an acre for on-site home or farm arrays.

Local Unsuitable Areas

Because of their distinctive natural, historic or scenic value, and special significance to the Tinmouth community, commercial solar facility development shall be excluded from (prohibited within), or shall not be supported by the town in the following locations

- Land that is subject to a conservation easement, whether or not the easement permits it or the holders of the development rights consent to it.
- Highest priority interior forest blocks as defined by State of Vermont as they overlie the Tinmouth Channel..
- Well head protection zone
- Location where a site cannot be screened from the view of neighbors and thus prohibits them from the peaceful enjoyment of their property
- A site that does not meet Tinmouth's prescribed screening standards
- Open lands at the entrances to the town: Land bordering Vt. 140 between Wallingford town line and Ballou's swamp; open fields at the junction of Vt. 140 and Vt. 133; and open fields visible from the intersection of Vt. 140 and East Road, the agricultural heart of the Tinmouth Valley
- A site that causes significant adverse impacts to historical or cultural resources, including Tinmouth Village National Historic District, state or federally designated historic sites and structures, and locally significant cultural resources identified in the Town Plan. See Vermont Historic Register Map, p. 81 and Appendix A, page 78.

These areas are similarly restrictive to other forms of development. They have a long history in Tinmouth town regulations and are consistent with the rest of the plan. They do not include any arbitrary prohibition or interference with the intended function of any particular renewable resource size or type.

Tinmouth Renewable Energy Summary

Solar Suitability After Subtracting Local Constraints (Page 77)

This map shows the location of prime solar sites from the solar energy resource map on page 67 that remain unlimited by the local constraints listed above and shown on the local constraint map. These remaining sites comprise 584 acres. Also shown are the locally preferred locations of impervious surfaces. These sites comprise 252 acres. The total of these two types of preferred solar sites shown is 836 acres.

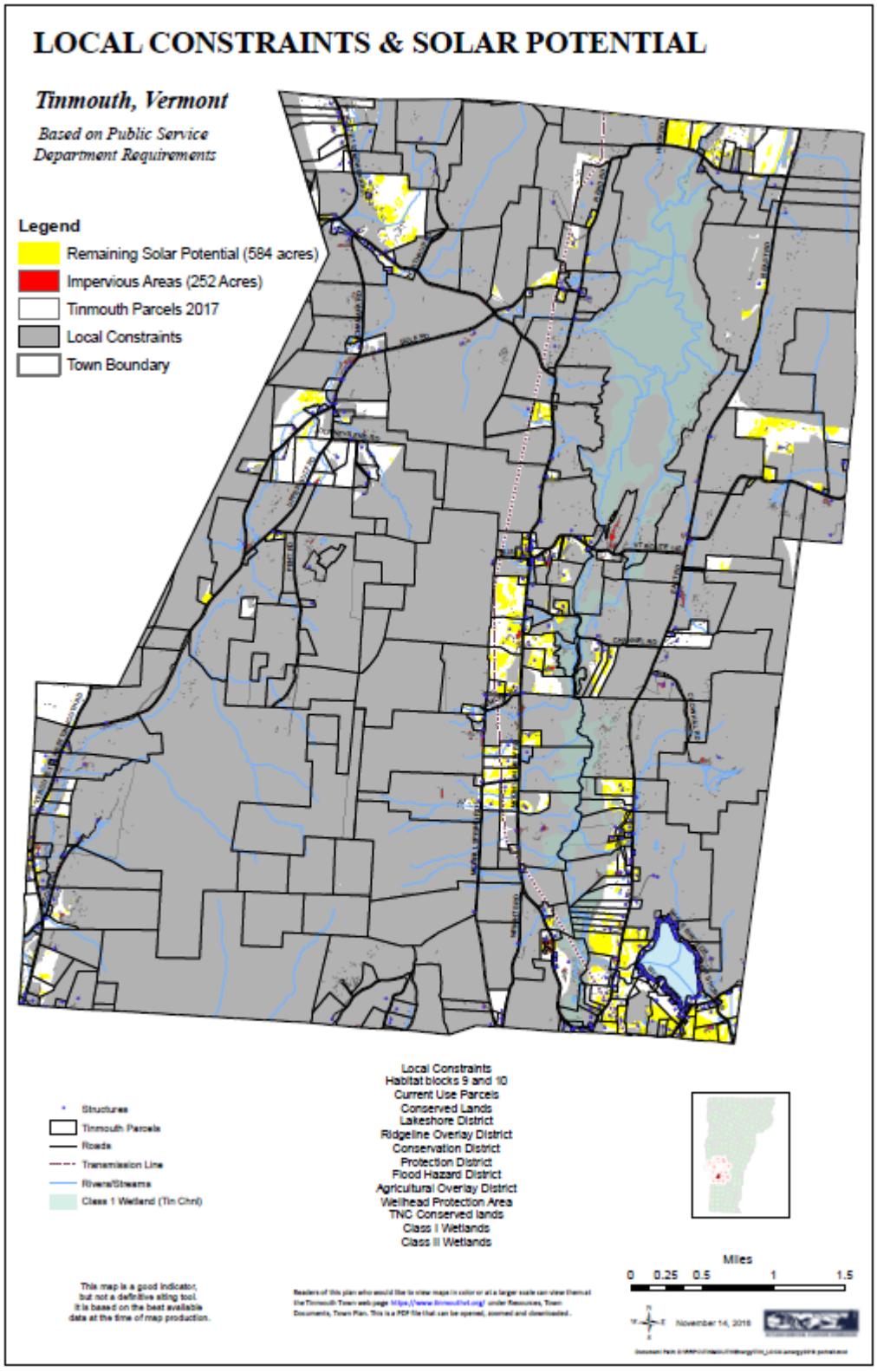
Tinmouth Renewable Energy Potential Acreage Summary	
Total Acres in Tinmouth	**18,161**
Acres Suitable for Renewables (Solar, Wind, Biomass – Prime and Secondary	**12,535**
Scenic Resource Areas	**Note 1)**
Local Possible Constraints – Conservation District, Historic District (in acres)	**Note 2)**
Acres Suitable for Solar (minus Constraints – in acres)	**584 Note 3)**
Impermeable Surfaces	**252**
Total Suitable for Solar	**836**
Solar Acres needed to make total generation target	**84.8**

For a summary of the information included on pages 74-77, please refer to the table above. Tinmouth's target of 14,369 MWh by 2050 is attainable and planned for in this document. Based on mapping completed by the Rutland Regional Planning Commission and associated guidance documents developed by the DPS for solar capacity, the town needs 84.8 acres suitable.

Table notes:

- Number of acres is unknown pending professional analysis. Data will become available on a site-specific basis as renewable projects are proposed.
- Many of the constraints overlap so their combined total is difficult to compute.
- This figure, derived from the Solar Suitability Map shown on the next page, includes only acres suitable for solar. Other renewables will add more energy sources.

All calculations are conservatively based on DPS guidance and solar capacity factors. The numbers shown above and elsewhere in this document do not take into account the higher capacity factors of other renewables or the projected advances in efficiencies for renewable technologies.


LOCAL CONSTRAINTS & SOLAR POTENTIAL
Tinmouth, Vermont
Based on Public Service Department Requirements
Legend
Remaining Solar Potential (584 acres)
Impervious Areas (252 Acres)
Tinmouth Parcels 2017
Local Constraints
Town Boundary
Structures
Tinmouth Parcels
Roads
Transmission Line
Rivers/Streams
Class 1 Wetland (Tin Chnl)
Local Constraints
Habitat blocks 9 and 10
Current Use Parcels
Conserved Lands
Lakeshore District
Ridgeline Overlay District
Conservation District
Protection District
Flood Hazard District
Agricultural Overlay District
Wellhead Protection Area
TNC Conserved lands
Class I Wetlands
Class II Wetlands
Miles
0 0.25 0.5 1 1.5
November 14, 2016
This map is a good indicator, but not a definitive siting tool. It is based on the best available data at the time of map production.

Energy Strategies and Policies to Achieve Town Targets

The purpose of this section is to identify specific actions that have the greatest potential for Tinmouth to greatly reduce fossil fuel use in a sustainable manner. Specifically, the following are strategies and policies to advance conservation and efficiency in space and water heating (thermal), and transportation and related land use changes.

Conservation and efficient use of energy

To encourage energy conservation, efficient buildings and the efficient use of energy by individuals and the municipality, the Planning Commission and the Energy Committee shall promote local residential and commercial efficiency and conservation improvements through information about programs and technical assistance available to residents. This committee shall advocate for appropriate renewable energy generation throughout the town. The Energy Committee will report annually to the town Select Board.

The Energy Committee shall:

- Create a webpage on the Tinmouthvt.org website which will provide links to programs and offers available to residents by the following organizations and others which may be deemed helpful: Efficiency Vermont, Green Mountain Power, BROC and Neighborworks.
- Promote energy efficient construction by distributing code information to building permit applicants and encouraging going beyond the Energy Code required insulation levels, air sealing standards and the use of efficient heating and cooling equipment.
- Encourage new municipal building design to include efficiency features that exceed the Energy Code and take advantage of Efficiency Vermont's new construction programs.
- Encourage the use of technologically advanced wood heating systems.
- Provide information to residents via postings on town bulletin boards, postings in Front Porch Forum and the monthly Tales of Tinmouth, and posting in the School's Friday News about programs and support available from:
    - Efficiency Vermont - appliances, lighting, heating and cooling systems and controls, home weatherization
    - Weatherization assistance provided by BROC Community and NeighborWorks of Western Vermont.
    - Green Mountain Power (GMP) programs to help customers reduce fossil fuel use
    - Neighborworks
- Provide information on the effective use of cold climate heat pumps. Publicize education/presentations in coordination with Efficiency Vermont and GMP.
- Educate the community on options for municipal solar, school solar, and community solar or other renewable energy projects and help viable projects move forward.

To demonstrate the town's leadership by example with respect to the efficiency of municipal buildings

The town implemented comprehensive energy upgrades on all municipal buildings in 2010 including the church, the Town Office, the Fire Department, the School and the Town Garage. In addition, all Town buildings are illuminated by LED or other cost effective efficient light sources. The School is receiving a comprehensive LED upgrade in the summer of 2019.

Transportation

To encourage a shift away from gas/diesel vehicles to electric or other non-fossil fuel transportation options the Energy Committee should:

- Promote the Drive Electric Vermont webpage which connects users to financial incentives, dealers, and recharging stations for EVs.
- The Town will apply for funding for additional parking for a park and ride if use demonstrates a need.
- The Town will be receptive and provide support for locating a charging station/or charging stations in the Town when and if demand develops.
- The Town will advocate for an electric school bus that can feed back into the grid during peak grid events.
- When the time is ripe, the Town will be receptive to hosting a "show and tell" day featuring different EVs and giving people an opportunity to talk with fellow community members who own them.

Land Use

Tinmouth has land use policies that result in the conservation of energy and demonstrate a commitment to reducing sprawl/strip development. The Planning Commission with the assistance of the Energy Committee should:

- Review and update the town Future Land Use Map to reflect the vision and goals of this municipal plan.
- Pursue (application has been submitted) a village Center designation for Tinmouth Village.

Accommodate the safe and effective use of renewable energy systems (residential

Endnote Page

1) Source: US Census Bureau, www.census.gov (page 9).
2) Figures provided in American Community Survey (ACS) 5-year estimates, 2015 (page 10).
3) Vermont Department of Environmental Conservation, Water Quality Division, Lakes and Ponds Section. http://www.anr.state.vt.us/dec/waterq/cfm/lakerep/lakerep_select.cfm visited 5-22-2007 (page 15).
4) Vermont Department of Environmental Conservation, Water Quality Division, Lakes and Ponds Section. http://www.anr.state.vt.us/dec/waterq/cfm/lakerep/lakerep_select.cfm visited 5-22-2007 (page 15).
5) Data on housing trends provided by Tinmouth Town Listers (page 23).
6) Transportation Data Management System, 2011 and 2016 (page 28).
7) Longfield, Jr., Robert F. The Vermont Backroad: A Guide for Protection, Conservation, and Enhancement of Its Scenic Quality. March 1974 (page 28).
8) Vermont Statutes Annotated, Title 10, Section 6085 (page30).
9) US Energy Information Administration, State Profile and Energy Estimates (page 43).
10) Climate Change in Vermont, Vermont Agency of Natural Resources (page 43).
11) Vermont Energy Dashboard 2017 (page 43).

Gulf Road Looking North-East

Appendix A: Tinmouth Historic and Culturally Significant Features

Tinmouth Village National Historic District (NHD)

Names in parentheses are from 1869 Beers map (Map 1). SHR numbers from Map 2.

1. Tinmouth School (front and second sections; 1883/1949) (School No. 6)
2. Town Office and Library (Rice/Taylor/Weeks store; possible 1791 meeting house (now library) (Store L.R. – Levi Rice)
3. Old Firehouse (once a Grange Hall; used as fire station, then restored as a meeting space) Old Creamery
4. White house, south of store (Packard) Rice house, Bliss Road; built 1835 (L. Rice)
5. Rathbun/Sawyer/Weeks house, Bliss Road; built 1815 (P.O.; M. Sawyer) Town sheds (1836/1920; built to cover carriages during Church services) White house across from school; once Parsonage (parsonage)
6. Not on Register: Rice Upper Farm house 1790's, west end of Bliss Road (L. Rice) Sawyer Cemetery (Cem.)

State Historic Register (SHR) and other historic sites

Names from 1869 Beers map (Map 1); SHR numbers keyed to map 2, State Historic Register Map

7. **North East Road**
8. Burr Clark house (also called Leonard house; stone; 1834; B.R. Clark) SHR – 14
9. Mattocks house (1st on right north of Rte. 140 (J.W.Noble) SHR 15
10. Ballard house (1st on left north of Rte. 140) (J. Ballard) SHR 13
11. Former Noble house/country inn, North East Road at corner of 140 (Henry Noble) SHR - 12
12. **Rte. 140 East of North East Road (Cobb Hill)**
13. Frog Rock (not SHR; top of Cobb Hill; best viewed traveling east)
14. Stone Corral on Young property; not visible from any road (Not SHR)
15. Hannibal Hopkins farm (H Hopkins) SHR
16. Truman Young farm – settled by John Hopkins in 1770- still run by his Young descendants.
17. Bicentennial Farm 1976. All buildings modern, however. (E. Hopkins)
18. **East Road**
19. House; corner Rte. 140 and North East Road, east side; possibly a replacement (L. Cobb)
20. Brick house on east side (L. Cobb) SHR 16
21. Small blue house on east side, now Burden (1869 D.G. – Dexter Gilbert, a large landowner and owner of property for rent)
22. Tinmouth Pond camps. 10 on the State Register. All in the Lakeshore zone. SHR 28-38
23. **Wright's Road**
24. General Clark's marble mill; replica water wheel run by water from the Big Spring (D.G. house occupied by Michael Green, peddler, and family; now replaced)
25. Marble Quarry. On Merrill Spring Road extension above Wright's Road.
26. **Mountain View Road**
27. Gray gambrel roofed house; c. 1790; one of three English gambrels in Tinmouth. (I. Phillips) SHR 18

28. South School Now a home and much added to. (School No. 5) SHR 19
29. White Cape Cod house (D.G.)
30. Red gambrel roofed house, c. 1790, or maybe 1824, one of three English gambrels. (D.G.) SHR 21
31. White Cape farmhouse (Fish farm – L. Campbell)
32. Federal mansion/Greek revival trim (D. Gilbert) SHR 20
33. **Merrill Spring Road**
34. Glenn Merrill house - where Merrill Spring turns 90 degrees south; once junction with back of the lots road (Mrs. Rogers)
35. Large black farmhouse (Mrs. Valentine) SHR 23
36. White farmhouse on a rise (also Mrs. Valentine) SHR 22
37. **Gilmore Road**
38. Farmhouse at south end of the road; Bicentennial farm which is operated by Campbell's descendants the Gilmore's, parts of the farmhouse are from the 1790's (Campbell)
39. **Rte. 140 from Village to East Road**
40. Fallen down c. 1790 gambrel roof house (M. Capron) SHR 10
41. Cape on north side; has remains of blast furnace in rear (A. Packard) SHR 11
42. Falling in old cheese factory on south side at bridge (Cheese fact)
43. Collapsed dam south of Rte. 140 bridge
44. Tinmouth Cemetery (south side, east of bridge)
45. **Rte. 140 North of village to North End Road**
46. White farmhouse on east side (Valentine) SHR 9
47. Yellow farmhouse on east side (A.H.Aldous) Cramton Cemetery (east side of Rte. 140; Cem.)
48. **North End Road**
49. Tinmouth Channel wetland (including wetlands, dams, and fens from North End Road to Mountain View Road at Danby town line).
50. Hortonia Power company dam (North End Road at culvert; south side)
51. Blast furnace remains, one on dam south of North End Road and another north of the road
52. Noble-Squier cemetery
53. **Harrington Cross Road**
54. Yellow farmhouse, gable to road; south side (W. Norton)
55. Marble Quarry, north of road
56. **Rte. 140, North End Road to Middletown line**
57. Cape Cod farmhouse, opposite McNamara Road (C. Crampton) SHR 2
58. House, formerly schoolhouse No. 7 at McNamara and Gulf Roads., opposite previous house SHR 4
59. **Lime Kiln, Northrup Road**
60. Old Cemetery, maybe #1, at Northrup Road Vt. Rte. 133, Ira to Middletown line
61. White gambrel roofed house; Dutch framing design south; English north (H. Thompson) SHR 1
62. **McNamara Road**
63. Gambrel roofed barn built 1913 (Clark, though built after his death) SHR 3 Farmhouse, 2 story, Dr. Theophilus Clark, home, farm and doctor's office for much of 19th Century (Clark) Not on SHR
64. **Gulf Road (Lower Gulf Road Large barn ¼ mile south of Rte. 140 – SHR 8**
65. Carriage barn, now house, painted red, just before McNamara Road (part of C. Youngs farm)
66. White Cape Cod farmhouse, intersection of McNamara and Gulf Road (L. Hathaway) SHR 5
67. Cape Cod house, built 1786 by Samuel Allen; moved ¼ mile south of original site. (C. Youngs) SHR 6

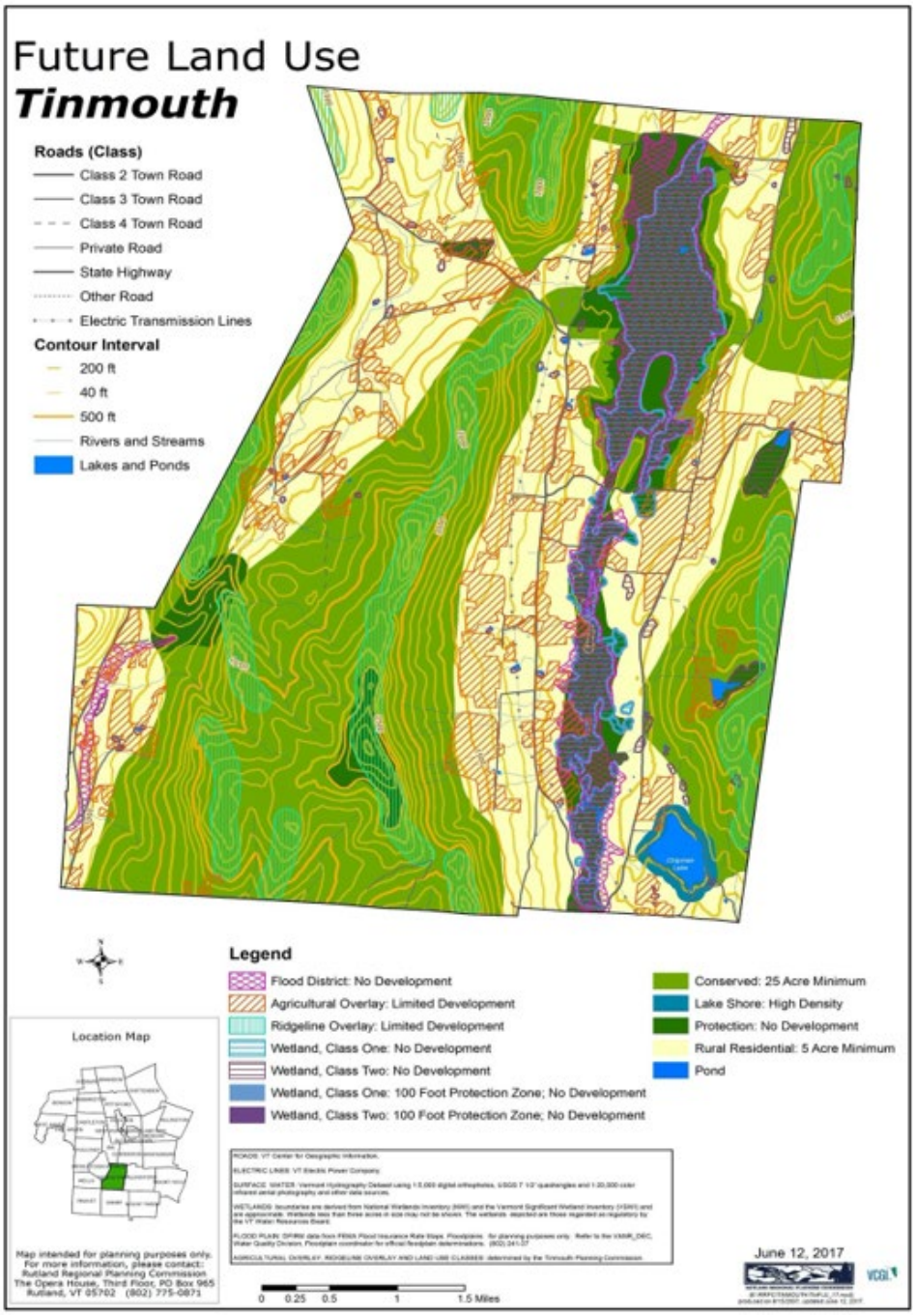
68. White Cape Cod, Journey's End Road; built by Archibald Norton around 1840. SHR 7
69. Yellow house, west side of northern intersection of Gulf and Upper Gulf Roads (W.C.)
70. Greek revival, gable to road farmhouse, on Lower Gulf near southern intersection with Upper Gulf Road. (E. Ives) SHR 2
71. **The Gulf (Wells Brook ravine) and side hill section of Gulf Road**
72. **West Tinmouth**
73. White farmhouse, bottom of Gulf Road. (W.S. Preston) SHR 25
74. White farmhouse, steep-pitched roof, apparently 1790s, just north of Gulf Road on Rte. 133 (Perhaps Clarke on Beers map)
75. Large farm complex, Greek revival farmhouse, coaching route stone in stone wall. (J.P. Grover) SHR 25
76. 1790's farmhouse, very near road, east side of Rte. 133 south of East Wells Road (E. Reed). SHR 27
77. Cape Cod style farmhouse, barn, McCoy Road. Once owned by Lt. Phineas Paul, 14th Vermont (P.C.Paul)
78. Rollin Cook cheese factory, intersection of Rte. 133 and McCoy Road (Cheese Fact, R. Cook)
79. Former schoolhouse number 3, once across from Cook cheese factory, at Brook Road; now at Wells Road intersection (School No. 3)
80. SHR 26 Lillie-Paul Cemetery (on 133 at Danby boundary; Cem.)Mountain Land (Special areas)
81. **The Purchase** – large forest west of the summit of the Tinmouth Mt. range and east of West Tinmouth. The mountain overlooking West Tinmouth is sometimes shown on maps as The Purchase, but the entire area properly bears that name. In the early 1800's two men acquired this area at tax sales. Locals sneeringly called it the Holland Purchase, after a 5,000 square mile purchase by Dutch investors in Western New York. Neither sold well. "Holland" forgotten within 50 years.
82. **Tinmouth Mountain Range (all areas on East and West slopes).**
83. **Tinmouth Purchase Recreation Area – town owned forestland with cabin and trails. Part of the area known as The Purchase**.

Campbell/Gilmore Barn, only the foundation

Town Maps

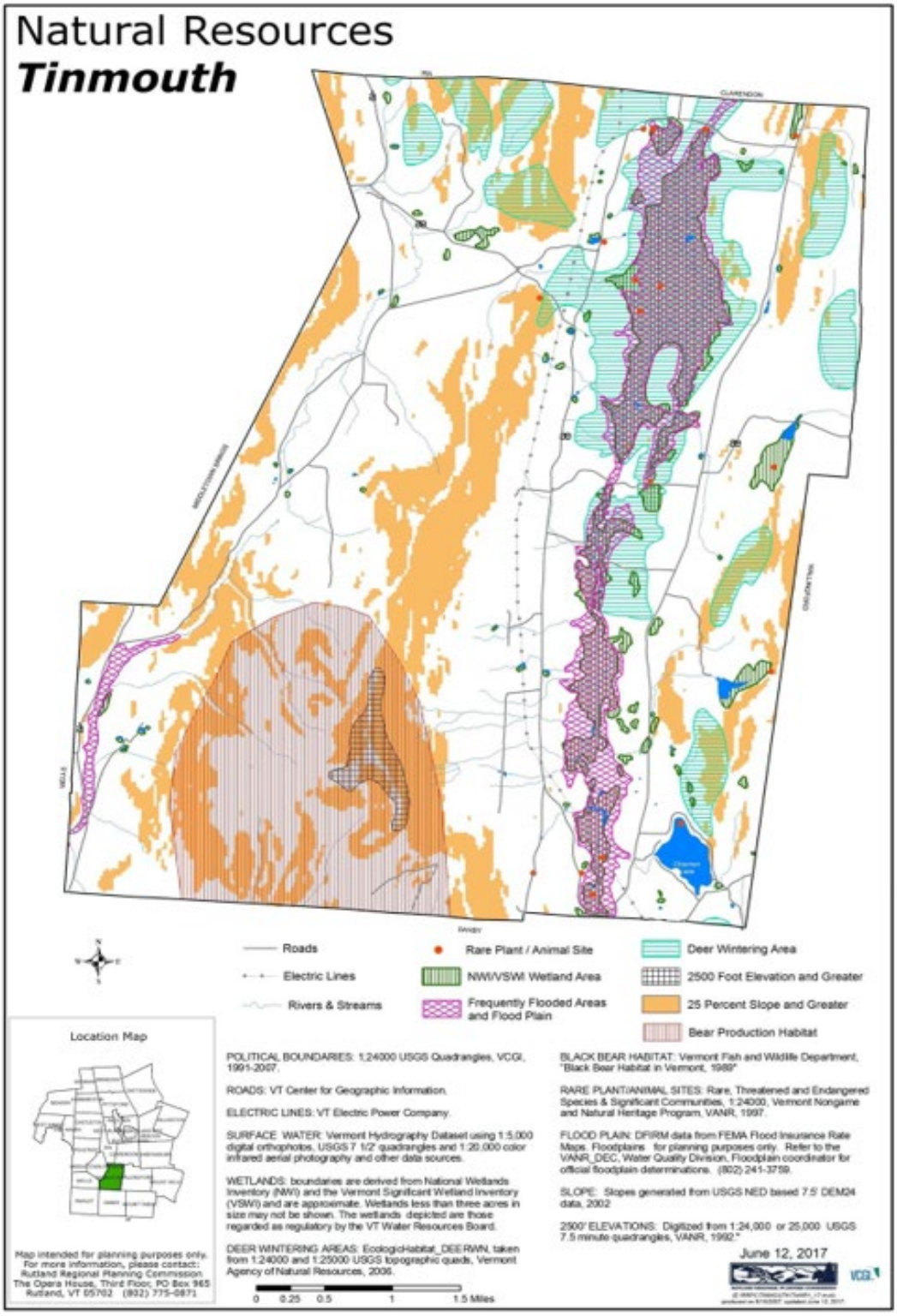
- **Future Land Use**

This map shows the Town's intended land use for the future as reflected in the current Zoning Regulations. The Legend explains the different categories in general terms. More detailed explanations can be found on pages 44 - 48. In obeying regulations, landowners should consult with the Vermont Department of Environmental Conservation to obtain more precise information about the location of the wetlands.



- **Natural Resources**

This map highlights significant natural features, some of which – such as slopes of 25% or greater – severely limit development. Others – such as deer and bear areas – indicate wildlife habitats that should be left undisturbed to the extent possible. The rare plant and animal sites should be left undisturbed.



- **Restricted Lands: Public and Private**

This third map shows the Tinmouth Channel Wildlife Management Area, which belongs to the State of Vermont, the Tinmouth Purchase Recreation Area, which belongs to the Town of Tinmouth, and the extensive areas of privately-owned lands to which either the Vermont Land Trust or the Nature Conservancy holds a conservation easement. Although these easements differ in some details, all of them prohibit further subdivision and generally limit their use to forestry and agriculture. Several of these 24 conservation projects allow the construction of a limited number of single-family residences. The Wellhead Protection Area, set aside to protect the quality of water for sale extracted from an active spring, has virtually the same restrictions as a conservation easement.

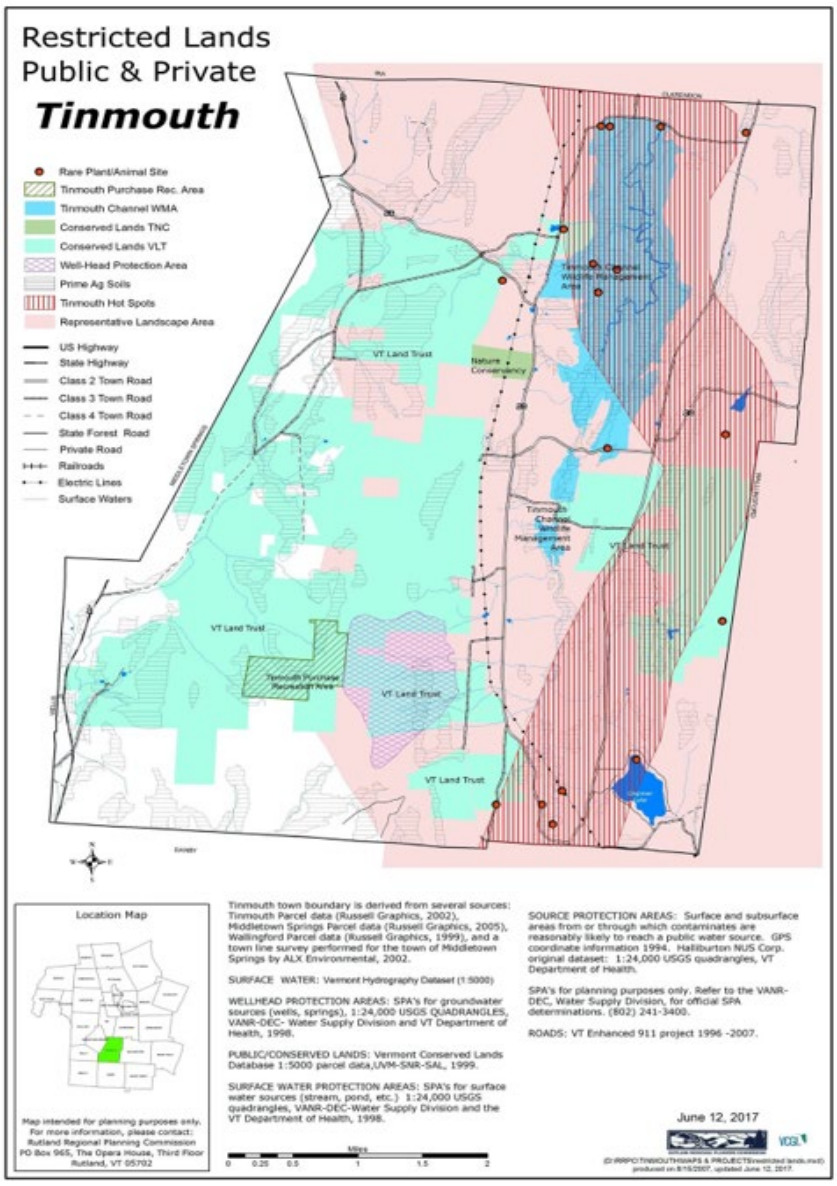
Two other areas are represented on the map:

TinHotspots

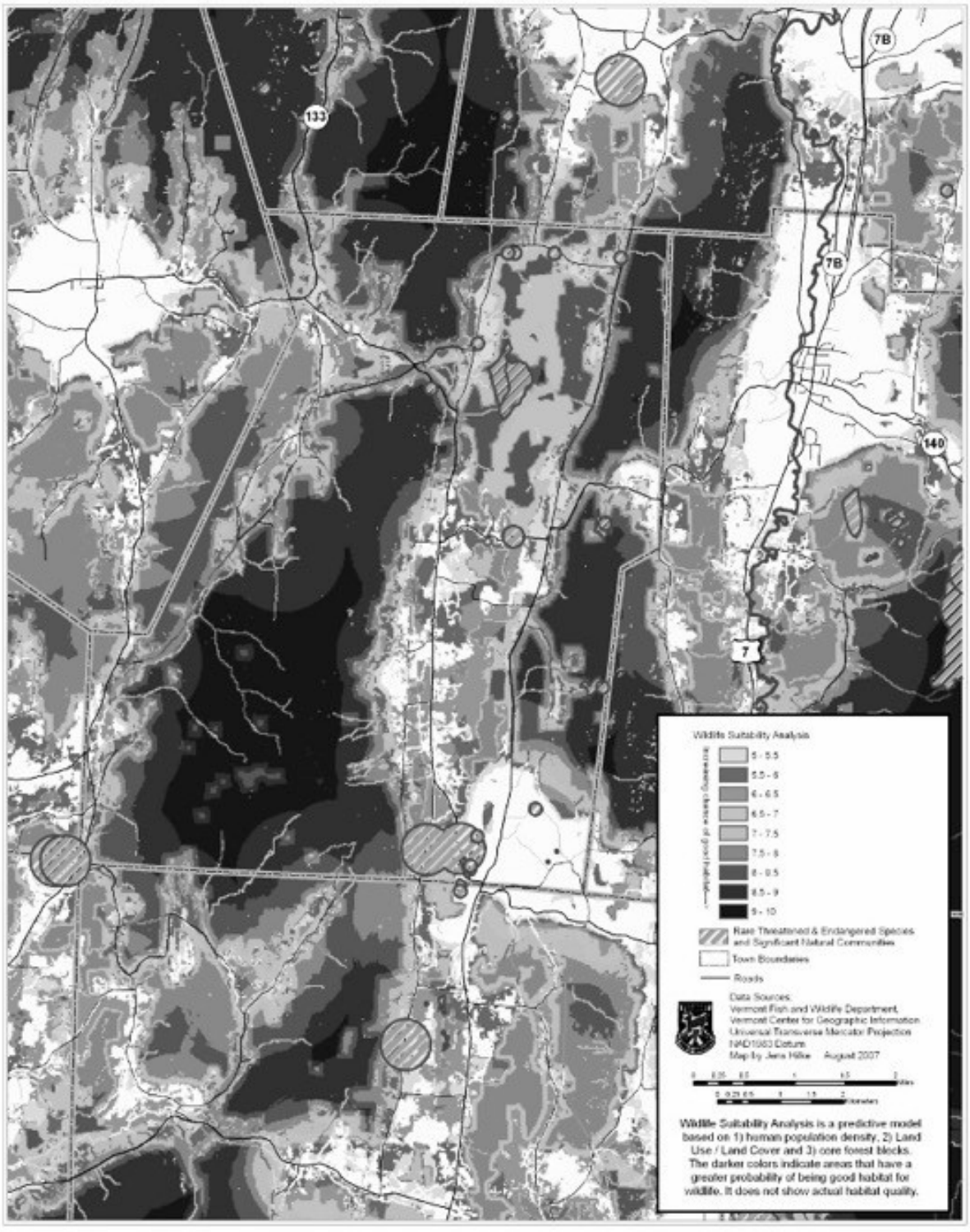
This dataset is the result of an effort to map biological "hotspots" in Vermont based on the "element occurrences" in the Nongame and Natural Heritage Program database. The NNHP database, compiled and maintained by the VT Department of Fish and Wildlife, records over 4000 locations of rare, threatened, and endangered plants, animals, and exemplary natural communities throughout the state. 2332 of the highest quality and rarest of these point locations were mapped, and polygons were drawn economically around concentrations of mapped points. These polygons are taken to represent areas of high biological significance or diversity

Representative Landscape Area

This coverage represents the results of an analysis of landscape diversity in Vermont. Polygons in the dataset represent as much of the physical diversity in each of the state's 8 biophysical regions (BPRs)~ hence the name “representative landscapes" (RLs). Units of physical diversity were based on elevation, bedrock type, surficial deposits, and landform. An understanding of the location of areas of high landscape diversity offers conservation scientists a key to identifying areas of high biodiversity value.

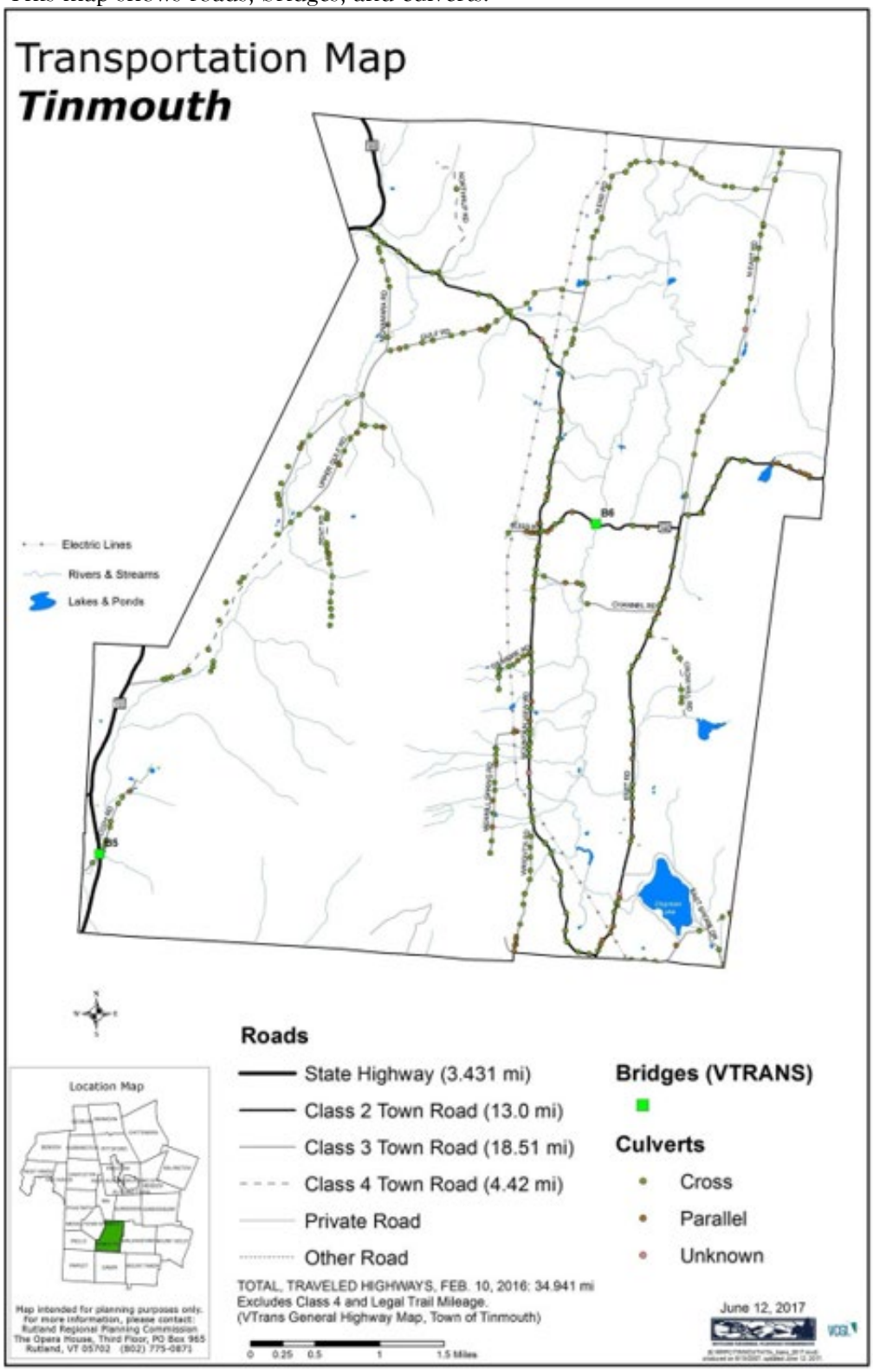


- **Wildlife Habitat Suitability Analysis from the Vermont Department of Fish and Wildlife**



- **Transportation Map**

  This map shows roads, bridges, and culverts.



- **Town Facilities**

  This map shows the locations of the Town Office, the Old Creamery, the Old Firehouse, the Firehouse, the Church, the School and Community Center, the Town Garage, and the Transfer Station

- **Beers 1869 Map of Tinmouth**