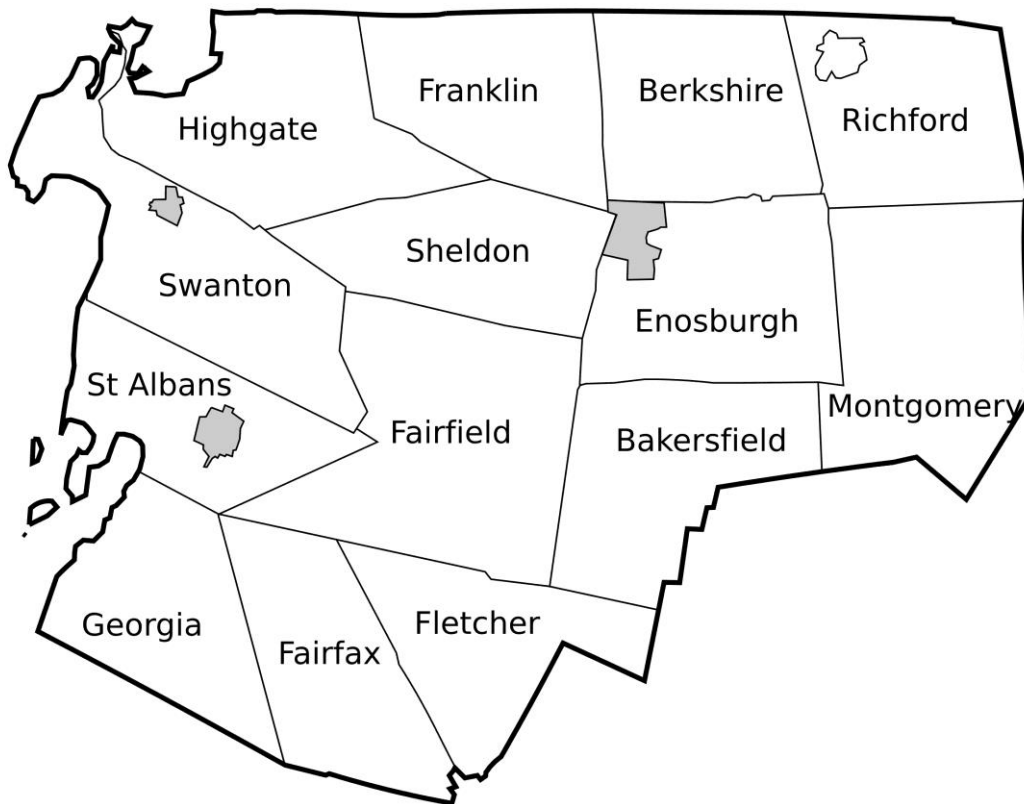


Conservation Needs Assessment

Franklin County, VT
Spring 2025



Franklin County, situated in the Northwest corner of Vermont, is the fifth most populous and eleventh largest county in the state, with an area of 692 square miles. It is bordered by Grand Isle County to the west, Chittenden County to the south, Lamoille and Orleans Counties to the east, and Quebec Province to the north. The county seat is St. Albans City, and it contains the towns of Bakersfield, Berkshire, Enosburgh, Fairfax, Fairfield, Fletcher, Franklin, Georgia, Highgate, Montgomery, Richford, Sheldon, St. Albans (town), and Swanton, as well as the municipalities of St. Albans City, Swanton Village, and Enosburg Falls.

Table of Contents

Introduction	2
Soil	2
Water.....	5
Air	9
Animals.....	11
Humans.....	14
Energy.....	16
Plants	20

Introduction

The Franklin County Conservation Needs Assessment (CNA) is a foundational document developed as part of the Locally Led Conservation Delivery system in partnership with NRCS and other local stakeholders. This assessment draws primarily from existing reports, natural resource inventories, and other available data sources to provide a comprehensive overview of the county’s current natural resource conditions and challenges. It is intended to be resource-based rather than program-specific, ensuring that conservation efforts remain flexible and responsive across a range of initiatives.

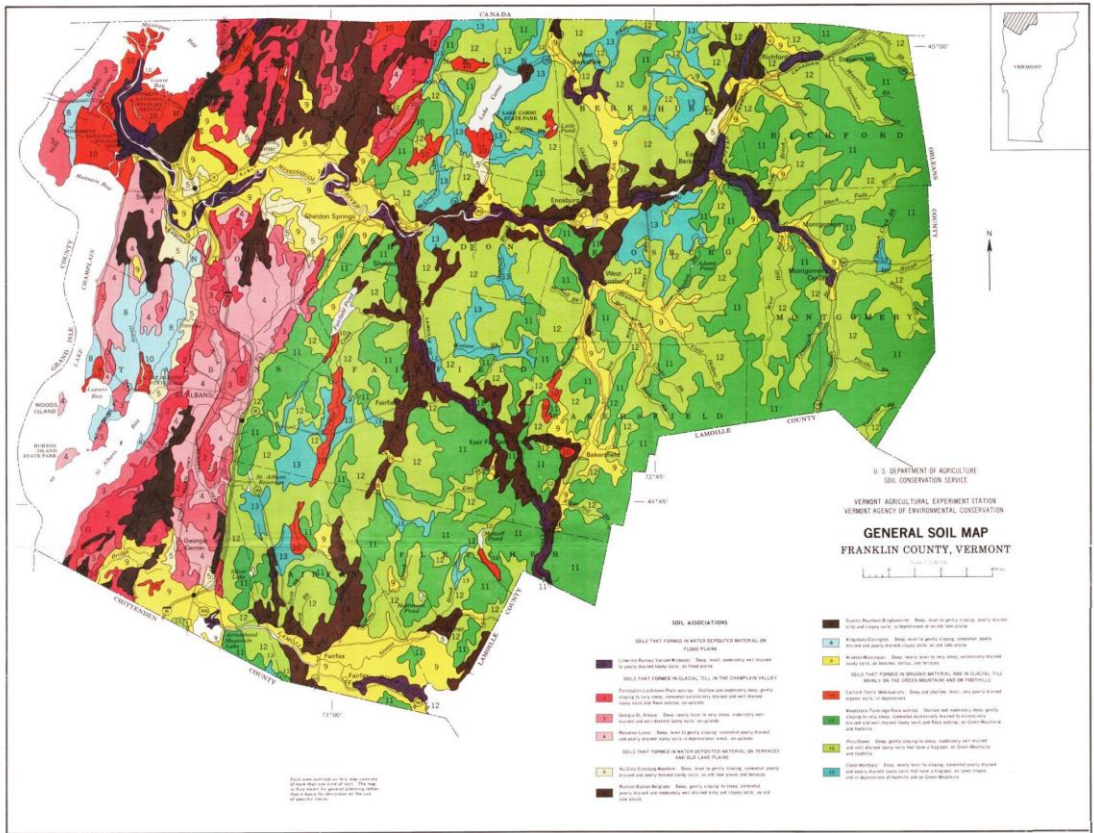
Importantly, the CNA is designed to work in tandem with the Franklin County Conservation Action Plan (CAP). While the CNA identifies and prioritizes resource concerns based on available data and technical analysis, the CAP incorporates additional local feedback, including input gathered through the Local Working Group, community meetings, and a public survey. Together, these two documents form the foundation for strategic conservation planning in Franklin County—aligning science-based assessments with the values, priorities, and lived experiences of the local community.

This process helps ensure that conservation programs and funding are directed where they are most needed, supporting long-term natural resource health and sustainable land management across the county.

Soil

Franklin County’s soil composition reflects its diverse geology, which is shaped by two distinct regions: the Champlain Valley lowlands in the west and the hillier Northern Green Mountains in the east. The soils of Franklin County developed in glacial material, recent alluvium, or organic deposits. The glacial material was deposited on fresh bedrock that had been exposed by

movement of the ice cap. The gross physical features of the county are determined to a great extent by the shape of the bedrock. Some of the bedrock either was not covered by glacial deposition or has been exposed by erosion since deposition. These areas of rock are quite common on the higher ridges in the Champlain Lowland and in the Green Mountains. In most of the Champlain Valley, however, little bedrock is exposed. The glacial deposits in some places are 100 feet thick or more.



Caption: General Soil Map from the 1979 SCS Soil Survey of Franklin County, showing two distinct areas on either side of the Fairlee Hill

escarpment.

The soils of the Champlain Valley, which makes up the western third of the county, are underlain by shale, slate, limestone, and dolostone. Soils include the well-drained Farmington, Lordstown, and Georgia-St. Albans in upland areas, as well as the poorly drained Massena-Lyons, which is found in depressional areas. Old lake plains and terraces in the Champlain Valley support sandy and clay soils such as Au Gres, Enosburg, Munson, Buxton, and Belgrade. The coastal Windsor-Missisquoi soils are excessively drained and sandy.

The foothills and Green Mountains to the east feature hills and valleys transitioning to higher mountain peaks. Soils in this area are often shallow and rocky, underlain by Cambrian phyllite, greenstone, graphitic slate, quartzite, gneiss, schist, and some minor lenses of dolostone and marble. Associated soils include Woodstock-Tunbridge and Peru-Stowe, which are common in the rocky, steep uplands.

precipitation rates increasing due to climate change, agricultural soils will be susceptible to increased flooding and erosion in the future.

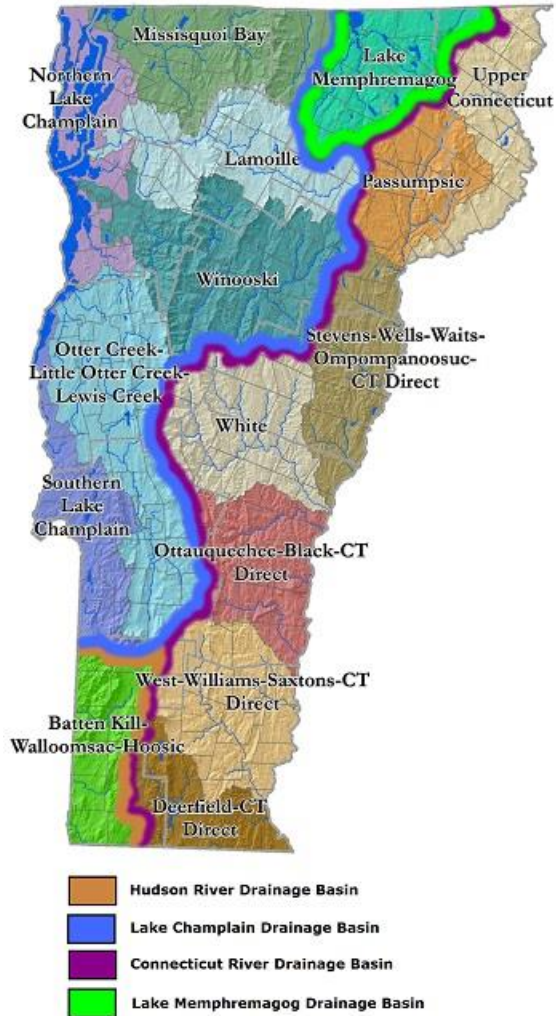
Sources:

- [Soil Survey of Franklin County, Vermont : United States. Natural Resources Conservation Service : Free Download, Borrow, and Streaming : Internet Archive](#)
- [Web Soil Survey](#)
- [Farmland Classification Systems for Vermont Soils](#)

Water

Water is an important resource for residents and visitors of Franklin County, making up approximately 8% of the region's total area. Franklin County is bound to the west by Lake Champlain, the thirteenth-largest lake by area in the U.S., which stretches from southern Vermont and New York into southern Quebec. The lake serves as an essential source of drinking water and recreation for Franklin County residents. Two of its major tributaries—the Missisquoi River and the Lamoille River—comprise the other two watersheds in which Franklin County is situated.

A Tactical Basin Plan (TBP) is a strategic guide produced by the Vermont Agency of Natural Resources to “protect the best and restore the rest” of Vermont's surface waters. The TBPs outline water quality goals, objectives, and strategies that safeguard public health, ensure the enjoyment of Vermont's waters, and maintain ecological integrity. Franklin County is primarily within the Missisquoi Bay Watershed, with portions of the county also overlapping the Lamoille River Watershed and the Northern Lake Champlain Direct Drainages (North Lake Basin).



Missisquoi Bay

The Missisquoi Bay Watershed extends over most of Franklin County. The Missisquoi River is the largest tributary of the bay, followed by the Rock and Pike Rivers. Other major tributaries of the Missisquoi River include Black Creek, Tyler Branch, and Trout River. The watershed's land use is 66% forested, 25% agricultural, and 6% developed, with forests offering the best protection for water quality by absorbing precipitation. However, in areas dominated by agriculture and development—such as the Rock and Pike subbasins—impervious surfaces and compacted soils contribute to polluted stormwater runoff, impacting water quality.

Missisquoi Bay itself is a shallow bay spanning Québec and Vermont, containing less than 1% of Lake Champlain's total volume but 7% of its surface area. High nutrient concentrations and the seasonal release of legacy phosphorus from sediments contribute to frequent cyanobacteria blooms, particularly during warm months, which degrade recreational opportunities. However, monitoring efforts in recent years have shown encouraging signs of phosphorus reduction, with the 2023 annual phosphorus level being the lowest recorded since 1994.

Compared to other Vermont watersheds, Missisquoi Bay remains in worse overall biological condition due to the higher density of agricultural and developed land uses. Many of the basin's lakes and ponds are in good condition, though some, including Lake Carmi and Fairfield Pond, experience stress from phosphorus and human disturbance along shorelines.

Lake Champlain

Lake Champlain is 125 miles long, up to 12 miles wide, and reaches depths of 400 feet. Its watershed covers 8,234 square miles, creating a 20:1 land-to-water ratio that has contributed to significant phosphorus loading from land-use activities. Excess phosphorus impairs water quality, leading to cyanobacteria blooms, low dissolved oxygen, fish habitat degradation, and reduced recreational use.

Phosphorus levels in the lake must be reduced to consistently meet water quality goals. Missisquoi Bay and St. Albans Bay have struggled with excessive phosphorus levels, which have exceeded established limits since monitoring began.

St. Albans Bay

The Northeast Arm of Lake Champlain, which includes St. Albans Bay, is located entirely within Vermont and contains about 13% of Lake Champlain's total volume. This region features islands, bays, and shallow areas, making it popular for boating and fishing. However, St. Albans Bay experiences frequent cyanobacteria blooms, similar to Missisquoi Bay, which impact water quality and recreational use.

Lamoille River

Parts of Georgia, Fairfax, and Fletcher contain Lamoille River tributaries and are part of its watershed. The Lamoille River begins its 85-mile journey in Greensboro and terminates at its confluence with Lake Champlain in Milton and Colchester.

Several waterbodies in the Lamoille River Watershed have been identified by the Vermont Agency of Natural Resources as priority areas for water quality remediation. These include:

- Mill Brook (Fairfax)
- Stones Brook (Fletcher)
- Halfmoon Pond (Fletcher)
- Arrowhead Mountain Lake (Georgia)

Arrowhead Mountain Lake, in particular, has shown poor water quality scores, attributed to atmospheric deposition and aquatic invasive species. However, compared to the Missisquoi Bay Watershed, the Lamoille River Watershed demonstrates better overall health, meeting several of the state's water quality standards.

Wetlands

Wetlands play a critical role in Franklin County's water quality, acting as natural filters by trapping sediments, nutrients, and pollutants before they reach rivers and lakes. Wetlands also help store floodwaters, protect shorelines from erosion, and provide vital habitat for wildlife.

The Missisquoi Bay Basin features a diverse range of wetland types, from open-water marshes to forested swamps. While many wetlands remain intact, some have been impacted by drainage, development, and agricultural activities.

Current monitoring efforts are not yet sufficient to provide a comprehensive picture of wetland health in the region. However, conservation efforts, including wetland restoration projects and protections under the Vermont Wetland Rules, are helping to improve and maintain these important ecosystems.

Solutions

Efforts to improve water quality in Franklin County include:

- Conservation practices on agricultural lands to reduce runoff
- Stormwater management strategies for developed areas
- Road erosion control measures
- Enhancements to municipal wastewater infrastructure
- Natural resource restoration projects, such as:
 - Riparian buffer plantings
 - Wetland restoration
 - River corridor easements

The Missisquoi Bay Watershed planning process is heavily focused on phosphorus reduction to meet the Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) as well as the Lake Carmi Phosphorus TMDL. Restoration efforts involve partnerships with community organizations to promote sustainable land stewardship practices and improve water quality throughout Franklin County.

Sources:

- [LCBP State of the Lake Report](#)
- [Basin 5 - Northern Lake Champlain Tactical Basin Plan](#)
- [Basin 6 - Missisquoi Bay Tactical Basin Plan](#)
- [Basin 7 - Lamoille River Tactical Basin Planning](#)
- [Improving the Health of the Missisquoi Bay Watershed](#)
- [Lake Champlain Basin Atlas - Watersheds & Tributaries](#)

Air

Vermont's air quality has historically been among the best in the United States. Like the rest of the state, Franklin County benefits from generally good air quality due to the relatively low population density, abundant natural landscapes, and robust regulatory frameworks. However, the air is not pollutant-free.

Air pollution can be harmful to human health and the environment. It is generated from both human activities, such as fuel burning, and natural sources, such as pollen. In Vermont, most pollutants are man-made and come from mobile sources such as cars, trucks, and other motorized vehicles. Natural sources of air pollution, such as wildfires and pollen, also contribute to seasonal air quality fluctuations.

Geography and weather also play a role in distribution and accumulation of pollutants, which often get trapped in low-elevation valleys during hot and humid weather events in the summer and during temperature inversion events in the winter. Air quality can also be affected by emissions that occur outside of the state, from sources such as electricity-generating facilities and wildfires. Notably, in 2023, wildfire smoke from Canada caused elevated pollution in Vermont.

Regulations and Monitoring

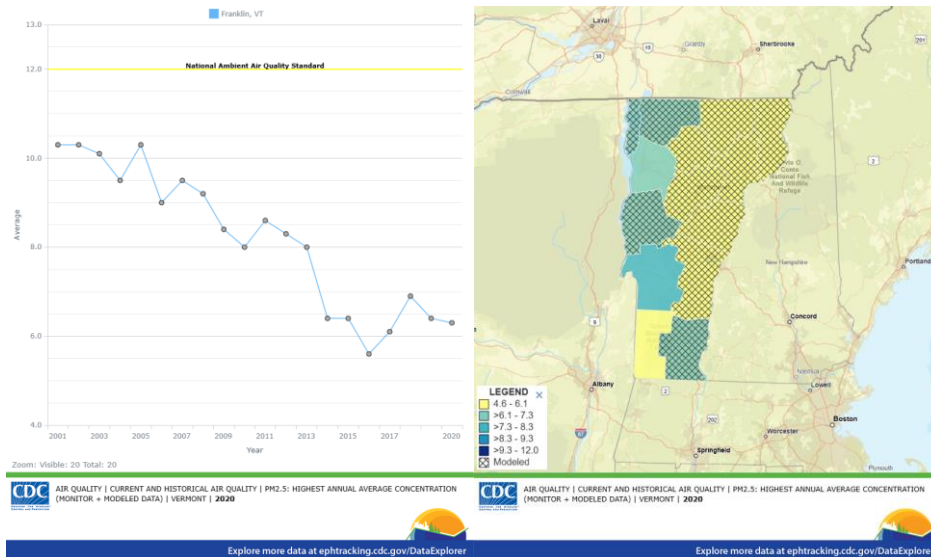
Air quality has significantly improved nationwide in the last 50 years. This is due in part to vehicle emissions standards recently adopted by many states, and largely to the passing of the Clean Air Act (CAA) in 1970. This groundbreaking federal legislation required the EPA to establish and set limits on National Ambient Air Quality Standards (NAAQS) for six common and widespread pollutants: particulate matter, ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. In accordance with the CAA, the Vermont Department of Environmental Conservation (DEC) currently monitors air quality at stations in Underhill, Burlington, Rutland, and Bennington, and models data for counties without monitoring stations. Through the Vermont Environmental Public Health Tracking Program, data is published on particulate matter (PM_{2.5}) and ground-level ozone concentrations.

Particulate matter (PM_{2.5}) consists of particles that are in the air. These particles come from dust, dirt, soot and smoke, and little drops of liquid. Some particles, such as soot or smoke, are large or dark enough to be seen; other particles are so small that you cannot see them. Particle pollution can come from primary or secondary sources. Primary sources include wood stoves or forest fires and let off particle pollution directly. Secondary sources, such as coal fires and power plants, let off gases that react and form particles.

Ozone is a gas that you cannot see or smell. "Good" ozone occurs naturally in the sky about 10 to 30 miles above the Earth's surface, forming a layer that protects life on earth from the sun's harmful rays. Ozone can be harmful to human health and the environment when it occurs at the ground level. Ground-level ozone forms when pollutants from cars and trucks, power plants, factories and other sources encounter each other in heat and sunlight.

The Data

Since the passing of the Clean Air Act, national aggregate emissions have dropped 78% and average PM_{2.5} emissions have dropped 40%. In Vermont, average annual PM_{2.5} has decreased 37% since 2001, from 10.6 to 6.7 micrograms per cubic meter.



Air quality in Franklin County has followed similar trends, with the average annual PM_{2.5} concentration dropping 39% since 2001. In 2020, Franklin County saw an average annual PM_{2.5} concentration of 6.3 micrograms per cubic meter, putting it slightly above the statewide average of 6.1. The current annual PM_{2.5} standard is 12.0 micrograms per cubic meter. There were no days in 2020 when the PM_{2.5} concentration in Franklin County exceeded this standard.

What's Next

Despite these improvements, Vermont's air quality still faces challenges. As the climate continues to warm, Vermont's air quality may become increasingly volatile with more frequent and intense wildfire events. Vulnerable populations remain at heightened risk during periods of poor air quality, such as during "heating seasons" and in summer months, when increased vehicle emissions combine with high temperatures to form ground-level ozone. Elevated levels of fine particulate matter (PM_{2.5}) and ground-level ozone can irritate the lungs, worsen respiratory conditions, and increase the risk of cardiovascular problems.

In addition to monitoring air quality under the CAA, Vermont has recently adopted more stringent vehicle emissions standards in an effort to remain in attainment of the EPA's National Ambient Air Quality Standards. It has also actively participated in regional programs such as the Ozone Transport Commission, a multi-state organization focused on reducing ozone pollution, and the EPA's Cross State Air Pollution Rule, in an effort to reduce interstate transport of air pollution.

Sources:

- [Vermont Environmental Indicators and Performance Trends Report - January 2021](#)
- [Air Pollutants and Health | Department of Environmental Conservation](#)
- [Our Nation's Air 2022](#)
- [Air Quality | Vermont Department of Health](#)
- [Summary of the Clean Air Act | US EPA](#)
- [Vermont in Transition: Chapter 2: ENVIRONMENT AND CLIMATE](#)
- [National Environmental Public Health Tracking Network Data Explorer](#)
- [VERMONT'S LEV PROGRAM](#)

Animals

Vermont is rich with animal wildlife, largely because we have an abundance and diversity of habitat that supports the needs of many species. These habitats include extensive areas of interconnected forests of many types, swamps and lakeside marshes, fens and bogs, cliffs and caves, seeps and vernal pools, fields and grasslands, and streams, rivers, and ponds. An important conservation goal is to maintain this diverse array of habitats to continue to support Vermont's wildlife resources and all the values they provide.

Wildlife is very important to the people of Vermont. This love of wildlife is more than anecdotal. The 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation conducted by the U.S. Fish and Wildlife Service documented that 62 percent of Vermonters went fishing, hunting, or wildlife watching. Vermont ranked second, only two points behind Alaska in participation (U.S. Dept of Interior 2011). When it comes to wildlife watching, however, Vermont was first in the nation with an impressive 53 percent of residents enjoying this activity. This same survey estimates more than \$704 million was spent on fish-and wildlife-based recreation in Vermont.

Fifty-eight species of mammals are found in Vermont. While a handful of Vermont's mammals are important to hunting and trapping tradition, (more than 150,000 deer with 48 days of hunting opportunity, annually and more than 40,000 turkey and both fall and spring hunting opportunities) most are small, nocturnal animals humans may go a lifetime without seeing. Three are non-native species – house mouse, brown rat, and Eastern cottontail. Thirty five are small mammals – weighing less than 1.1 lbs. There are 17 species that are believed to be rare or uncommon and are tracked in the Natural Heritage Database. Five hibernating bat species are state-listed as endangered following a recent frightening decline due to White-nose Syndrome. Two are very rare, recently-returned carnivore species – Canadian lynx and American marten. Other rare species include the Long-tailed Shrew, Rock Vole, and Southern Bog Lemming.

Every 10-years, Vermont's Fish & Wildlife Department updates the Wildlife Action Plan to help guide the Fish & Wildlife Department, partners, stakeholders and others in the conservation of our Species of Greatest Conservation Need (SGCN) and efforts to keep common species common. They also supply a list of endangered and threatened animal species. Notable, in the

most recent 2015 revision, is the growing specters of climate change and diseases, the role pollinators play in the environment, and the reminder that habitat loss and degradation remain the primary threats to most wildlife. The problems most frequently identified have not changed much from the first plan. They include:

- Loss of habitat (from conversion, degradation, fragmentation)
- Impacts of roads and transportation systems
- Pollution and sedimentation
- Invasive species
- Information needs and data gaps critical to conservation success
- Climate change

Species of Greatest Concern included in the Wildlife Action Plan

Table 1.1 Summary of Changes to SGCN Lists 2005:2015

Taxon	2005 SGCN	2015 SGCN	Change Notes
Amphibians & Reptiles	19	19	No changes
Birds	57	50	Removed: Long-eared Owl, Henslow's Sparrow, Osprey, Cooper's Hawk, Barn Owl, Veery, Blue-winged Teal Added: None
Fishes	33	29	Removed: Arctic Char, Atlantic Salmon (anadromous), Brassy Minnow, Muskellunge and Quillback Added: Northern Pearl Dace
Invertebrates	191	198	Removed: 19 species Added: 26 including 9 bumble bee species
Mammals	33	33	Removed: Black Bear and Mink Added: Moose and Snowshoe Hare
Plants	577	673	Added 96 species

Amphibians: The threats identified most frequently for Vermont's reptile and amphibian populations are all closely related to habitat degradation: trampling and direct impacts, road and transportation system impacts, habitat fragmentation, habitat alteration, and habitat conversion.

Birds: Vermont serves as host to 268 bird species for some, if not all, of their annual life cycle. Perhaps the single most significant emerging issue impacting birds in Vermont during the last 10 years has been the conversion of forest and grassland habitat to utility-scale wind and solar energy generation. Although descriptors such as 'renewable', 'sustainable', and 'environmentally friendly' create an image of energy development that is less harmful than fossil fuel, wind and solar energy development still involve habitat loss and impairment.

Fish: The 80 native fishes face many conservation challenges. The threats of habitat alteration, loss, and fragmentation are pervasive in Vermont's rapidly changing landscape. The introduction of nonindigenous fishes, including associated aquatic pathogens and parasites, also pose risks to aquatic ecosystem health and native species conservation. Just within the past 20 years, seven non-native fishes have shown up in state and interstate waters.

Invertebrates: Of the thousands of species that occur in Vermont, several are rare or threatened enough to be at risk of disappearing from the state in the future. The causes that lead to their predicament vary among species. One of the greatest obstacles to acting to help conserve these “at risk” invertebrates has been the scarcity of information that exists on their distribution, abundance, habitat requirements, life history characteristics, population trends, and threats.

Mammals: In total, sixty-one mammal species presently exist in Vermont or were here just prior to European settlement. Vermont is at a crossroad. Due primarily to conscious choices made by her citizens in the last 100 years (restoration of white-tailed deer, beaver, wild turkey, fisher populations, enactment of Act 250 legislation, and wetland regulations, etc.), as well as economic forces that essentially allowed the state to bypass the Industrial Revolution, Vermont has remained predominantly rural throughout the 20th century. Many mammal species, therefore, are at population levels that are likely higher than they were prior to European settlement (fisher, red fox, white-tailed deer, raccoon, bobcat). Today, however, with Vermont's population growing, development pressures, and increased roads and traffic, the potential for significant habitat destruction in the next ten years is high. In addition, global climate change is already influencing the potential residency of some native mammal populations in Vermont.

Wetlands in Franklin County

In Franklin County, large wetland complexes of marsh, swamp, and floodplain associated with Lake Champlain and the deltas of the larger rivers provide regionally significant waterfowl and marsh bird habitat.

Northern Green Mountains in Franklin County

The extensive, unfragmented forests of the eastern region of Franklin County provide habitat for many species of wildlife that thrive in remote, interior forest conditions. The high elevation forests of the Northern Green Mountain region provide habitat for several species of birds, including Bicknell's thrush, Swainson's thrush, and blackpoll warbler.

Domesticated Animals in Franklin County

In addition to wild animals, Franklin County is home to more than 90,000 domesticated farm animals, including livestock and poultry. With over 47,000 cattle and calves in on-farm inventory alone, it is important for farmers to adopt site-specific BMPs (Best Management Practices) to ensure that farm animals are minimally impactful to the natural environment. Common conservation practices include manure storage, bedded pack facilities, barnyard run-off collection, and laneway development and stream crossings. Likewise, with more than 22,000 layers in inventory, farmers must take precautions to protect their flocks against diseases such as bird flu.

Sources

- [Mapping Vermont's Natural Heritage](#)
- [Animals - White River Natural Resources Conservation District](#)
- [Ag Census](#)

- [Endangered and Threatened Species in Vermont](#)

Humans

With an estimated population of 50,994 in 2023, Franklin County is the fifth most populous county in Vermont.

Populations/People and Race/Ethnicity

Demographically, it is relatively similar to the state of Vermont. The 2023 U.S. Census reports that 94.7% of the population identifies as White, 2.0% as Hispanic or Latino, and 1.0% as Asian. Less than 3% identify as Black, American Indian and Native Alaskan, and/or Native Hawaiian and Other Pacific Islander. 7.2% are veterans. The median age is 40.9 years, and 17.3% of the population is 65 years or older.

Income and Poverty

The median household income is \$79,078 -- 2.6% lower than the state median and 1.7% higher than the national median. The county's poverty rate is 9.9%, 0.2% higher than the state rate.

Education

Franklin County does differ from the rest of Vermont in that only 28.8% have received a Bachelors Degree or Higher, compared to 43.7% statewide.

Business and Economy

Since 2010, Franklin County's labor force has increased by 2.9%. In 2023 the county had the fifth largest labor force in the state with 28,514 people. Large industries include Trade, Transportation, and Utilities (21.9% of all covered employment) and Manufacturing (16.0%). Relative to the state, Franklin County has a higher concentration of employees in Natural Resources and Mining industries (2.3% higher than the state share). The county's annual average unemployment rate for 2023 was 1.8%, slightly lower than the statewide average of 2.0%.

Like in other rural counties, common barriers to successful employment have been identified as transportation, childcare, housing, and substance use disorder. Problems with internet and technology access also pose a challenge.

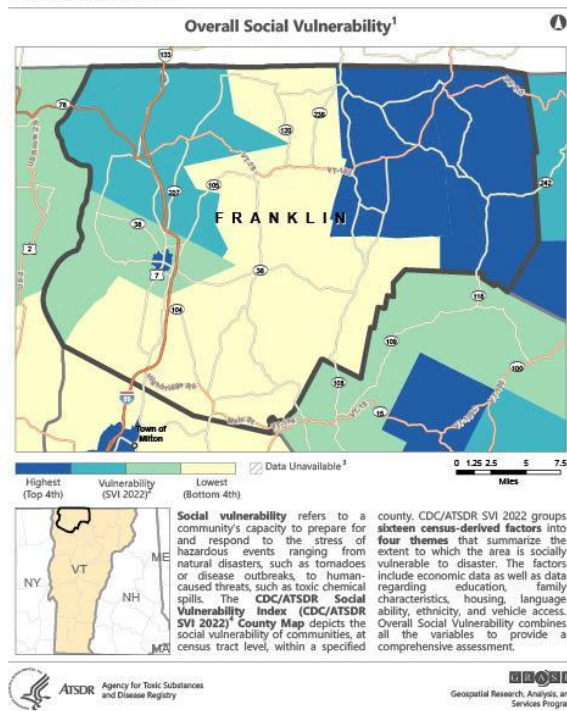
Social Vulnerability

Social vulnerability refers to the resilience of communities when responding to or recovering from threats to public health. The Social Vulnerability Index (SVI) is a planning tool developed by the CDC and Agency for Toxic Substances and Disease Registry (ATSDR) to identify and evaluate social vulnerabilities across geographies. The SVI can help communities prepare for and recover from public health emergencies.

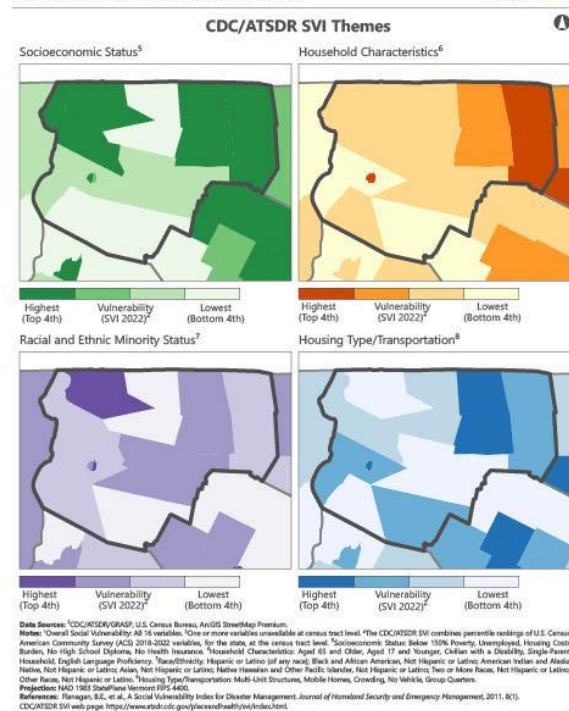
The SVI draws together 16 different measures of vulnerability in four different themes: Socioeconomic Status, Household Characteristics, Racial and Ethnic Minority Status, and Housing/Transportation. In 2022, Franklin County received an overall SVI score of 0.4615 out of 1, indicating a low to medium level of vulnerability.

Within Franklin County, towns in the north of the county – including Swanton, Highgate, Richford, Berkshire, Enosburg, and Montgomery – face higher overall vulnerability than towns in the south of the county, such as Georgia, Fairfax, Fletcher, and Bakersfield. This may be accounted for by the southern towns’ proximity to the more economically prosperous Chittenden County. In 2021, 30.8% of Franklin County’s labor force worked in Chittenden County.

CDC/ATSDR Social Vulnerability Index 2022
FRANKLIN COUNTY, VERMONT



CDC/ATSDR SVI 2022 – FRANKLIN COUNTY, VERMONT



Sources

- [NRPC Northwest VT Employment Challenges Survey Report 2021](#)
- [Franklin County Census](#)
- [U.S. Census Bureau QuickFacts: Franklin County, Vermont](#)
- [ECONOMIC & DEMOGRAPHIC PROFILE SERIES](#)
- [CDC/ATSDR Social Vulnerability Index 2022 - Franklin County](#)

Energy

Overview

Vermont has no fossil energy reserves, but the state's forest-covered mountains and fast-running rivers are home to substantial renewable energy resources. The mountains provide wind energy; rivers provide hydroelectric; and forests support the state's wood products industry, whose byproducts also fuel electricity generation and provide home heating.

In part because of the state's small population, Vermonters use less total energy than the residents of any other state in the nation, and their total energy consumption per capita is among the lowest 10 states. However, due to its lack of fossil energy reserves and progressive Renewable Energy Standards policy, Vermont produces less than one-fourth of the total energy it consumes.

The transportation sector accounts for almost 34% of state energy consumption. The residential sector, with its high heating requirements during winters, closely follows with 33% of energy consumption. The commercial sector uses 20%. The industrial sector, which includes the manufacture of electrical components, food production, and agriculture, accounts for about 13% of state energy use.

Vermont is a member of the Regional Greenhouse Gas Initiative (RGGI), which was established in 2005 to cap and reduce greenhouse gas emissions from power generation. The state has the lowest carbon dioxide emissions of any state in the nation. Proceeds from the sale of RGGI carbon allowances help fund state energy efficiency programs that provide energy efficiency services to consumers.

Electricity

More than 80% of Vermont's electricity supply comes from out of state, since the permanent shutdown of the Vermont Yankee Nuclear Power Station in 2014. The largest share of the state's electricity comes from hydroelectric power, most of it generated in Canada. Currently, Vermont's in-state electricity is generated almost entirely from renewable resources, including hydroelectric power, solar, biomass, and wind.

Only about 1 in 10 Vermont households uses electricity as their primary home heating source. Still, the residential sector accounts for two-fifths of the state's electricity consumption, followed by the commercial sector at one-third, and the industrial sector at one-fourth.

Vermont has the highest number of electric vehicle charging locations per capita. However, the state ranks 32nd in the nation in terms of total public charging locations, with 426 as of October 2024.

Vermont is the only New England state that has not restructured its electricity industry to allow retail competition. The state has 17 electricity distribution companies: 1 investor-owned distribution utility, 14 municipal utilities, and 2 rural electric cooperatives. Most of Franklin

County is served by Green Mountain Power and Vermont Electric Co-op. Hydroelectric facilities in Enosburg Falls and Swanton provide municipal utilities to those towns and some neighboring areas.

Renewable Energy

Vermont has the largest share of in-state electricity generation from renewable resources of any state, reaching almost 100% every year since 2015. In 2023, conventional hydroelectric power was the largest source of in-state electricity generation at 57%, and solar energy accounted for about 16%. Biomass, almost entirely from wood and wood waste, accounted for about 15%, and wind farms contributed about 13% of the state's total electricity generation.

Vermont is one of 24 states and territories that have introduced 100% renewable energy goals. Current legislation requires 100% renewable energy by 2035 for all utilities and 100% renewable energy by 2030 for Green Mountain Power and Vermont Electric Coop.

Petroleum

Vermont has no crude oil reserves or production, nor does it have any petroleum refineries. Although there are no petroleum product pipelines in the state, there is a petroleum product terminal in the Burlington area. Refined products arrive by rail and truck from neighboring states and Canada.

In 2022, about 57% of the energy consumed in Vermont was petroleum-based, the second highest share in the nation, after Hawaii. Although the state uses less petroleum than all the other states, Vermont uses more petroleum per capita than almost two-thirds of the states. Vermont's transportation sector consumes the largest share, accounting for almost three-fifths of the state's total petroleum use. The residential sector accounts for nearly one-fourth of Vermont's petroleum consumption. Almost 6 in 10 Vermont households use fuel oil, kerosene, or propane to heat their homes, a larger share than in all other states except Maine and New Hampshire.

Natural Gas

Vermont has no natural gas reserves or production. The state's single natural gas utility receives its supply from a small-capacity pipeline that brings natural gas south from Canada and distributes to the counties along Lake Champlain, all the way down to Addison County. Vermont's commercial sector accounts for about 55% of the natural gas consumed in the state, and the residential sector uses almost 29%. Because much of the state's population lives in the Greater Burlington area, nearly one in six Vermont households rely on natural gas for their primary home heating fuel.

The northwestern part of the state remains the only area with access to natural gas service. As a result, Vermont is the nation's second-smallest total natural gas consumer and the second-smallest natural gas consumer on a per capita basis among the states, after Hawaii.

Coal

Vermont does not have any coal mines or coal reserves, and there are no coal-fired power plants in the state. Vermont is one of six states in the ISO-NE regional grid, which received less than 0.2% of its electricity supply from coal-fired power plants in 2023.

Energy Burden

In 2023, Efficiency Vermont released the Energy Burden Report, which examines energy usage in the context of income, and is an important lens for understanding the impacts of energy costs on households and communities. Energy burden is calculated as the percentage of total household income spent on energy—electricity, thermal, and transportation.

The report found that parts of eastern Franklin County experience high burden. Particularly, Montgomery's total energy burden was found to be 23%. This may be in part due to its relatively small population and low household median income. Reports like this one are important because they can help us understand if Vermont's energy transformation programs are reaching the customers who can most benefit from them.

Vermont's Energy Policy

In 2022, Vermont updated its Comprehensive Energy Plan (CEP) to guide the state's energy policy and achieve its climate goals. The policy prioritizes the reliable, secure, sustainable, and affordable provision of energy while ensuring economic vitality, efficient energy use, and environmental sustainability. The plan sets goals to meet growing energy needs with renewable sources, focusing on three key sectors: electricity, thermal, and transportation.

The high-level goal is to meet 90% of Vermont's energy needs with renewable sources by 2050.

Electricity

The electricity sector is a central component of Vermont's energy transition. The CEP sets a goal of 100% carbon-free electricity by 2032, with at least 75% of this coming from renewable energy sources.

The state aims to evolve its electric grid to accommodate these changes, emphasizing the integration of energy resources including solar and wind. Vermont's energy strategy envisions a secure, affordable grid capable of enhancing resilience while reducing emissions. This transition will require grid optimization, including better integration of renewable energy.

Thermal

The thermal sector, which includes energy for heating and cooling, is another focal point of Vermont's energy transformation. Fossil fuels are currently the dominant source of thermal energy in the state, though alternatives are slowly gaining ground. The CEP targets a 30% share of renewable thermal energy by 2025 and 70% by 2042.

Electric heating, such as through heat pumps, has grown but remains a smaller part of the energy mix. The shift towards renewable sources for heating is critical to decarbonizing the state's buildings and achieving the broader greenhouse gas reduction goals.

Transportation

Vermont's transportation sector is also undergoing a transition toward greater renewable energy use. The CEP sets a target to meet 10% of the transportation sector's energy needs with renewable sources by 2025, growing to 45% by 2040. A key part of this effort is the adoption of electric vehicles (EVs), which is already showing promise. By 2022, Vermont had 7,502 electric vehicle registrations and led the nation in per capita EV charging ports. The growing availability of EVs and charging infrastructure is expected to play a significant role in the state's strategy to reduce transportation emissions.

Federal Funding and Economic Impact

Vermont is leveraging federal funding through the American Rescue Plan Act (ARPA) and Inflation Reduction Act (IRA) to support its energy transition. These allocation include:

- \$80 million for weatherization programs
- \$15 million to support renewable energy projects for low-income Vermonters
- \$45 million for the Municipal Energy Resiliency Grant program

The state's clean energy economy continues to expand, with clean energy jobs making up 6% of all jobs in Vermont as of 2022. This sector contributes significantly to the local economy, helping the state meet its energy and GHG reduction goals while providing new economic opportunities.

Sources:

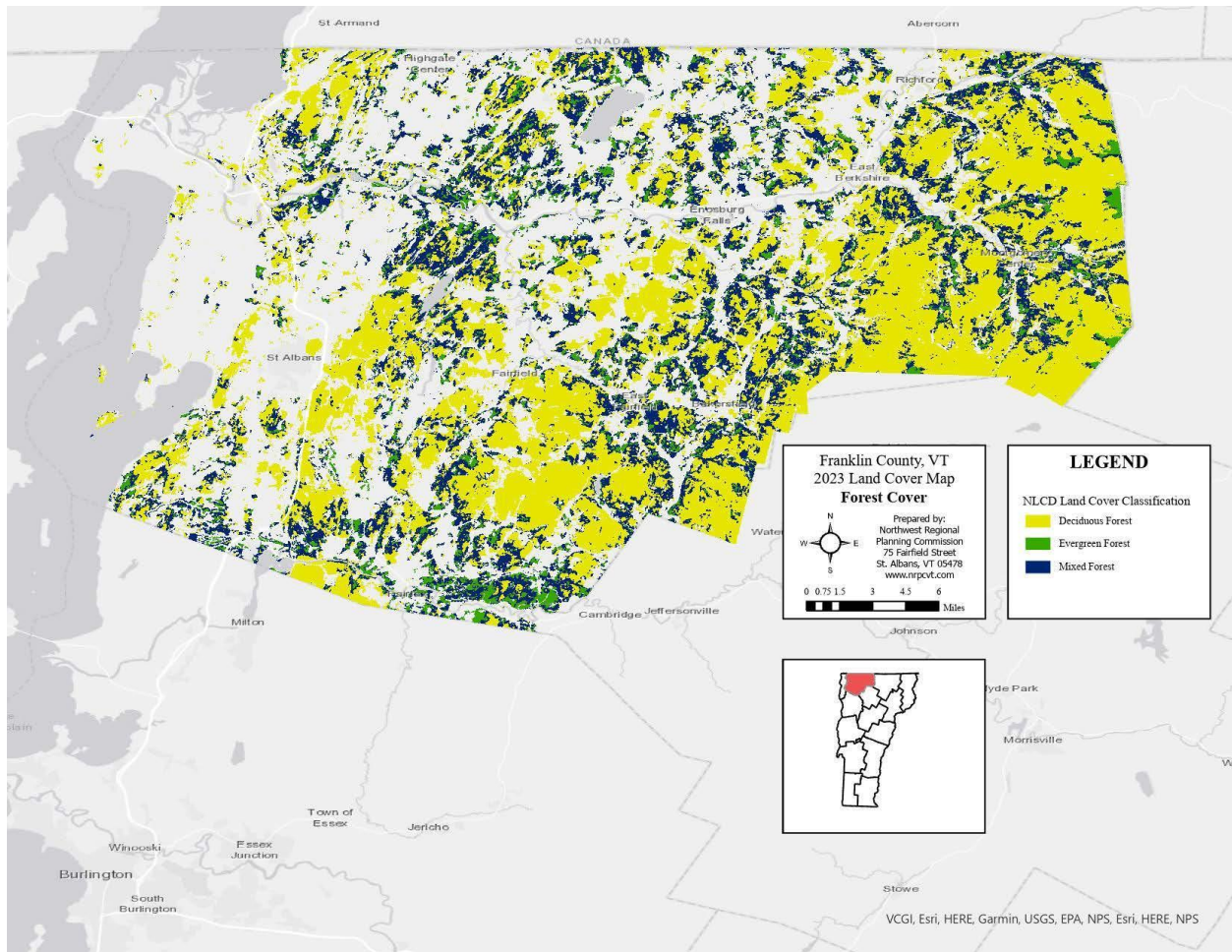
- [Energy Planning](#) - NRPC
- [Zero Emission Vehicle \(ZEV\) Sales Requirements and Low Emission Vehicle Standards](#).
- [The 2023 Vermont Clean Energy Industry Report](#)
- [2023 Vermont Annual Energy Report](#)
- [2024 Vermont Annual Energy Report](#)
- [2022 Vermont Comprehensive Energy Plan](#)
- [2022 Vermont Comprehensive Energy Plan - Executive Summary](#)
- [State of Vermont ENERGY SECTOR RISK PROFILE](#) - maps for electric, natural gas, and petroleum utilities
- [Vermont State Energy Profile](#) - US EIA
- [Electric Utility Service Territory Map](#)
- [2023 Vermont Energy Burden Report](#)
- [REGIONAL ENERGY PLAN](#) - NRPC, good maps in here

Plants

Franklin County is home to a diverse array of plant life shaped by its unique topography, climate, and soil conditions. The county's plant communities are strongly influenced by its two distinct biophysical regions: the Champlain Valley in the west and the Northern Green Mountains in the east.

Forests

Today, 48.7% of Franklin County is forested.



Caption: Map of Forest Cover in Franklin County, VT. Credit: Cliff Jenkins, NRPC.

Champlain Valley Forests

The Champlain Valley's warm, dry climate and clay and sandy soils once supported extensive Mesic Clayplain Forests. These forests were historically dominated by red maple, beech,

hemlock, swamp white oak, bur oak, white oak, white ash, and shagbark hickory. However, much of this original forest has been replaced by agriculture, leaving only small remnants.

On rocky hills within the Champlain Valley, diverse oak-hickory forests thrive, supporting species such as black oak, red oak, and shagbark hickory. Along the lake's calcareous soils, northern white cedar was historically common.

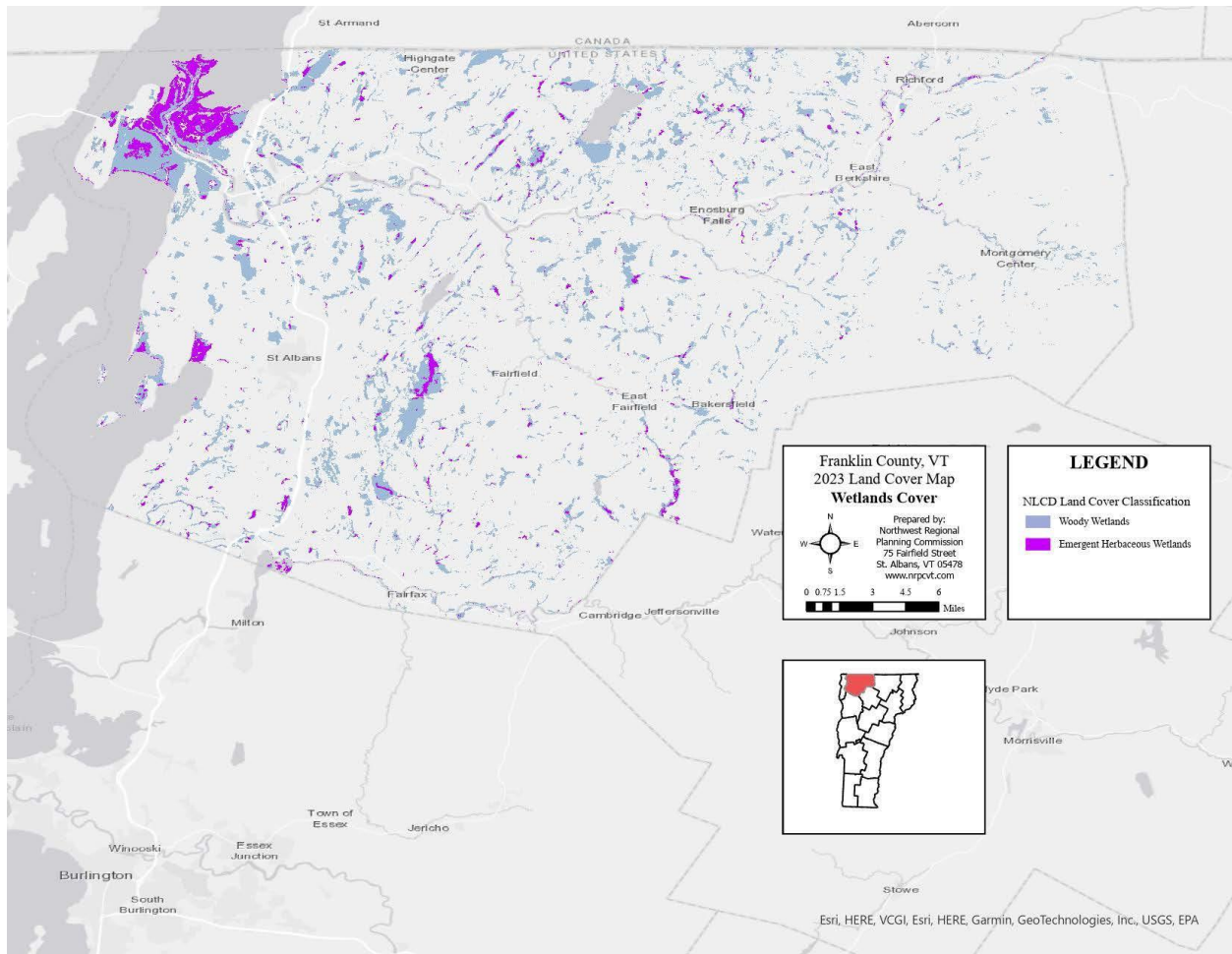
Northern Green Mountains Forests

The higher elevations and cooler climate of the Northern Green Mountains support a different set of forest types. Northern Hardwood Forests, with sugar maple, beech, yellow birch, and black cherry, dominate lower elevations. As elevation increases, these forests transition to Spruce-Fir Northern Hardwood Forests, and eventually to alpine meadows at the highest peaks.

The extensive unfragmented forests in this region provide critical habitat for species adapted to cooler conditions. Hemlock forests are found in lower elevations, while Mesic Red Oak-Hardwood Forests are often restricted to warmer south-facing slopes.

Wetland and Floodplain Vegetation

Despite extensive agricultural development, wetlands cover approximately 9.5% of Franklin County's total land area. These wetlands include marshes, swamps, and floodplains, particularly near Lake Champlain and major rivers such as the Missisquoi River.



Caption: Map of Wetlands Cover in Franklin County, VT. Credit: Cliff Jenkins, NRPC.

Wetlands support a variety of plant species, including sedges, grasses, and shrubs, which thrive in waterlogged soils. While many floodplain forests have been converted to farmland, some riparian vegetation persists, consisting of species like willows, alders, and wetland grasses.

Climate and Growing Zones

Franklin County spans USDA Plant Hardiness Zones 4b and 5a. Western Franklin County falls within Zone 5a, where average extreme minimum winter temperatures range from -20°F to -15°F . The eastern portion lies in Zone 4b, with colder temperatures ranging from -25°F to -20°F . These zones influence which perennial plants can thrive, with Zone 5a allowing for a slightly longer growing season.

The Champlain Valley, characterized by low elevation and milder conditions, enjoys a growing season that ranges from 130 to over 150 days, particularly near Lake Champlain. In contrast, the Northern Green Mountains experience much cooler summer temperatures and shorter growing seasons, with some high ridges being 20°F cooler than the Champlain Valley.

Cultivated Crops

Franklin County's rich agricultural heritage is supported by its fertile soils and climate. Western Franklin County's low elevation and rolling hills are ideal for agriculture. According to the 2022 Agricultural Census, the most common crops by acreage include:

- Forage (hay/haylage): 43,658 acres
- Corn for silage/green chop: 19,361 acres
- Corn for grain: 5,904 acres
- Soybeans for beans: 1,109 acres
- Vegetables harvested: 351 acres

These crops are concentrated in the Champlain Valley, where the combination of productive soils and a longer growing season create favorable conditions for farming.

Conservation Considerations

The diverse plant communities of Franklin County provide valuable ecological services, such as stabilizing soils, filtering water, and offering habitat for wildlife. As agricultural development continues, preserving remaining patches of native forests and wetlands will be critical to maintaining biodiversity and ecological balance within the county.

Sources

- [USDA Plant Hardiness Zone Map](#)
- [2. BIOPHYSICAL REGIONS AND A LANDSCAPE PERSPECTIVE FOR CONSERVATION AND MANAGEMENT](#)
- [Wetlands, Wildlands, and Woodlands](#)