Climate Change and Land Use

Smart growth reduces greenhouse gas emissions and keeps Vermont's rural landscape intact

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Land Use Regulations Impact on Climate Change

Low density is an inefficient use of land with greater dependence on cars. This land use pattern uses more energy and emits more climate change causing emissions. **Compact walkable neighborhoods** offer diversity of housing choice, high quality open space and access to surrounding natural areas, employment, services and shopping -- providing lifestyles less dependent on cars.

Low density:

Uses more energy for heating and cooling.
Low density development encourages larger building footprints with higher heating and cooling needs.

Results in more driving.
Sprawling suburban and rural areas are heavily dependent on cars with limited opportunity for walking, biking and taking the bus to everyday destinations.

Causes loss of natural habitats, lower carbon sequestration and storage.
Low density zoning rules allow Vermont's working and natural landscape to be converted to development, eliminating the existing and future carbon sequestration and storage benefits. Inefficient use of finite buildable land worsens stormwater, whose impacts are increasingly costly to mitigate.

Compact walkable neighborhoods:

Use less energy for heating and cooling.
Compact density development encourages smaller building footprints with lower heating and cooling needs.

Allow for less driving.
Compact development promotes efficient travel that is less dependent on cars, and provides more choice and opportunity for walking, biking and taking the bus.

Conserve natural habitats, maintained carbon sequestration and storage.
Compact development in existing development areas decreases development pressure on Vermont's working, natural landscape and preserves it for existing and future carbon sequestration and storage benefits.

Sources: Initial Vermont Climate Action Plan, Page 60 »
Forest Carbon, An Essential Natural Solution for Climate Change »

This article gives further detail regarding the importance of land use policy in addressing climate change.

The following guide is intended to provide municipalities with guidance on how to amend the land use regulations to limit low density sprawl, enable compact walkable neighborhoods, and protect the working and natural landscape to ensure climate change resilience.

Equity in Addressing Climate Change

Certain populations are more vulnerable to the impacts of climate change and to policies that are developed to address it. As land use policies are considered, it is important to ask the questions below to empower more inclusive decision-making:

Who is helped? **Who is harmed?** **Who is missing?**

Things to consider from the State of Vermont Climate Council's Guiding Principles for a Just Transition:

All recommendations directly identify and support relevant impacted and frontline communities.

Investments, policies, administration, and oversight tackle the needs of impacted people first, providing the greatest benefits of transitions to these communities.

Future climate goals must be broad for the well-being of all Vermonters and include targeted strategies for different groups that take into account their specific histories, sociocultural and economic realities.

Where plans and policies create burdens, these burdens are shifted away from impacted communities.

For more information on building equity into climate change actions, see the State of Vermont Climate Council's Guiding Principles for a Just Transition.

Creating and Reinforcing Compact Walkable Neighborhoods

One of the most impactful ways to reduce greenhouse gas emissions is to enable more compact walkable neighborhoods in areas planned for growth:

Eliminate minimum lot sizes in areas planned for growth.

Many Vermont municipalities have applied rural or suburban lot size standards onto urban or village centers. This hinders compact development and discourages walkability. Amend bylaws to eliminate minimum lot size requirements or ensure that existing lot size requirements mirror traditional village lot sizes. This will reduce the number of non-conforming structures that may exist in your municipality and thereby simplify the development review process by avoiding unnecessary conditional use or site plan review that may be required for non-conformance.

Remove maximum residential density standards in areas planned for growth.

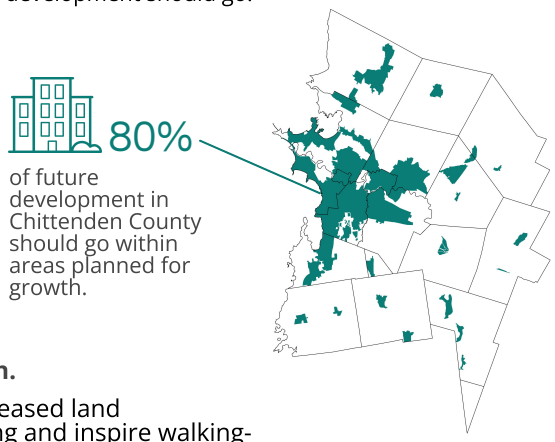
Amend bylaws to remove maximum residential density standards. These standards create unneeded regulatory complexity in areas planned for growth which are already constrained by other dimensional standards (e.g. height, coverage, footprint, etc). Maximum residential density standards in areas planned for growth can make it impossible for a new development to provide the smaller housing units that are needed.

Lower (or remove) minimum parking requirements in areas planned for growth.

Minimum parking requirements have not been an effective tool in either accurately predicting parking need or in successfully producing great, walkable places. In most cases, lenders and tenants will demand a minimum number of parking spaces. Municipalities should focus on where that parking is located, not how much parking there should be. To address this, minimum parking requirements can be eliminated entirely, or at least eliminated for smaller parcels. See information on EV charging on page 5.

Chittenden County Map: Areas Planned for Growth

The areas planned for growth are teal on this map. This land area is only **15%** of the county. It is served by existing infrastructure, established based on local zoning, and defines where at least **80%** of future development should go.



Waive or reduce impact fees for development in areas planned for growth.

Impact fees outside of urban/village centers can help curb sprawl through increased land development costs. But in municipal centers, where the goal is to reduce driving and inspire walking-oriented communities, impact fees can discourage investment in development. Consider waiving or reducing impact fees in areas planned for growth. Development in areas planned for growth will include impacts to municipal services, but municipalities could analyze whether the increased investment in these areas is worth the cost on services.

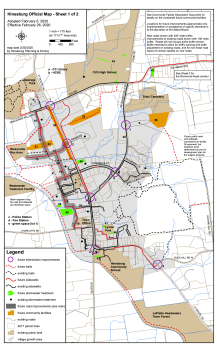
Plan for infrastructure.

Developing in areas planned for growth requires that sufficient infrastructure be in place. Municipalities need to take an active role in planning for future water, wastewater, stormwater, transportation, and public facilities-related infrastructure. Preliminary engineering reports are typically needed to fund final design and construction of water, wastewater, and stormwater projects. Transportation infrastructure (e.g. streets, sidewalks, shared-use paths) and other public facilities (e.g. parks, municipal garages, schools, etc.) often require a scoping study before final design and construction can be funded using Federal funds. By completing the necessary planning work for infrastructure, often in concert with an Official Map, a municipality can directly implement the land use and energy goals in the Town Plan and ensure that future development is done in a manner that combats climate change.

Adopt an official map.

Adopt an official map which can help ensure that future growth patterns match those desired by the municipality and sends a signal to developers on the desired public facilities for walking/biking infrastructure.

According to the Vermont Planning Information Center (VPIC):



The official map is a powerful tool available to Vermont municipalities to control community design by identifying the locations of future public facilities. The map—which can show future street alignments, planned trails, sites reserved for public buildings, and areas reserved for stormwater and flood control—provides a clear picture to property owners, developers, and the public of the municipality's intentions with regard to its future physical form and design.

All future development proposals shall accommodate public facilities shown on an official map. Failure to accommodate legally enables the municipality to acquire the necessary property.

Source: Official Map: Vermont Land Use Education & Training Collaborative »

Image: Town of Hinesburg Official Map (Click to Enlarge) »

Allow more than one primary structure on a lot.

Many bylaws allow only one 'principal' building on a lot. There is no need to arbitrarily limit each lot to one building via bylaw. This severely limits residential density and may create unneeded regulatory complexity. Dimensional standards and fire separation requirements (for any structures with three or more units, and sometimes two units) already regulate the size and placement of buildings. *

Simplify "use" regulations.

"Use" regulations in local zoning bylaws often require housing types other than single-household dwellings to receive "conditional use" approval, or potentially other types of complex development review approval (e.g. PUD), before they are able to be constructed. This increased regulatory complexity adds time and cost to the development review process for housing types that are typical of a Vermont village or downtown (duplex, triplex, small apartments). Simplify "use" regulations by making more housing types allowed by-right. *

Adopt more permissive non-conforming structure rules.

Many municipalities have zoning regulations that heavily restrict how non-conforming structures can be changed and require review by the Development Review Board (typically conditional use). This can make upgrades and building expansion for these structures difficult or impossible. Municipalities should review their non-conforming structure regulations and consider easing rules to administratively allow for upgrades and/or expansion in the areas planned for growth.

Enabling Better Places: A Zoning Guide for Vermont Neighborhoods »
Agency of Commerce and Community Development »
Vermont Planning Information Center: Official Map »

Keep Working and Natural Landscapes Intact for Climate Change Resilience

Plant and animal species are interconnected with their landscapes. Maintaining natural habitats and migration corridors protects ecosystem processes, which increases our resilience to extreme weather events and maintains critical carbon storage features in the natural environment. Landowner and land manager actions can influence the ability of the landscape to sequester carbon from the atmosphere. Human decisions on land management and water resources affect carbon storage and greenhouse gas emissions.

Here is a list of things you can do to increase resilience, carbon sequestration, and carbon storage in the working and natural landscape:

Create zoning regulations to protect forests, wildlife habitat, river corridors, wetlands, and riparian areas to mitigate the impacts of development on natural resources.

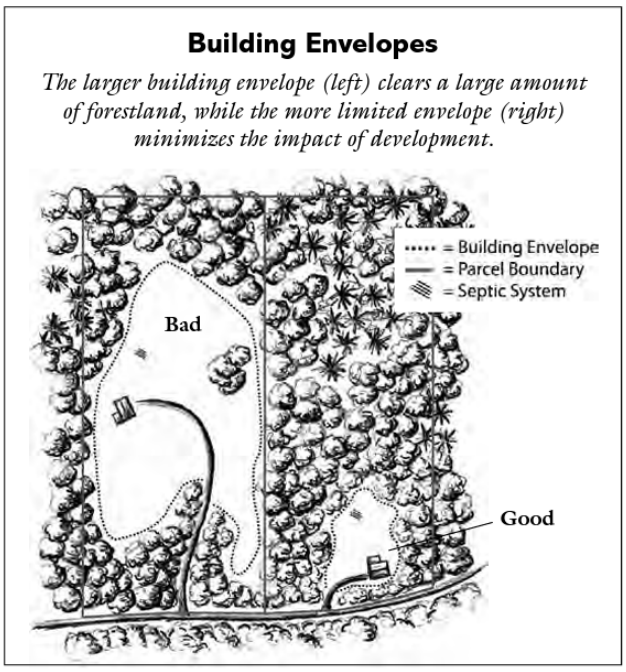
It is important to define these resources clearly. See Chapter 18: Writing Clear Definitions from VNRC's *Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action* for guidance on this.

Conservation and Forest Zoning Districts.

For large intact locations integral to significant ecological or forest integrity, ensure the zoning bylaws severely limit developmental potential, subdivision and fragmentation. This can be done with conservation and forest zoning districts with large minimum lot sizes (25 acres +), clearing limits and/or building envelopes for the limited development that may be allowed (see the image to the right).

Other non-regulatory programs that can help protect these areas include Current Use, which requires a minimum parcel size. Bolton's Conservation District is a great example.

Overlay Districts are another tool that can help protect these important resources. Jericho's Natural Resources Overlay District is a great example.



Source: VNRC's Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action »

Direct Appropriate Growth in Rural Areas.

For locations in rural areas where subdivision may be appropriate, the ultimate goal is to have smaller lot sizes for development, with significant conservation of the remaining parcel. There are many methods that can be used to do this effectively including, but are not limited to, Conservation Subdivisions, Clustered Developments, or Planned Unit Developments (PUDs).

Each of these can be used to protect natural resources identified in the regulations, guide the subsequent development of subdivided lots, limit resource fragmentation and consider forest and agricultural management. These tools allow the same amount of homes to be built in accordance with the zoning district's density but on smaller lots. The ultimate design is less land intensive and protects the natural resources on the remaining parcel (usually at least 50% of the lot is conserved). Good examples include Williston and Warren.

Source: VNRC's Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action »

Create maximum road/driveway length.

This will minimize the impact of development and fragmentation of natural habitat with steep slope standards to avoid shorter, but steeper roads. See Chapter 17: Road and Trail Policies from VNRC's Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action for a thorough understanding of this issue, solutions and to avoid unintended consequences.

Vermont Conservation Design »

VNRC's Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action »

Implementation Manual: Open Space & Resource Protection Regulations, 2007 »

Planning: A Key Step Toward Protecting Forest and Wildlife Resources - Act 171 Guidance »

Initial Vermont Climate Action Plan »

A Note About Building Heating and Cooling, Electrification, and Energy Efficiency

According to the Vermont Energy Action Network 2021 Progress Report, the thermal heating and cooling of buildings accounts for about 34% of Vermont's greenhouse gas emissions, second only to transportation (which is 40%). And 74% of this energy comes from fossil fuels. Over half of the emissions are generated at the residential level, followed by the commercial sector.

Vermont's electricity purchases are now markedly cleaner than in the past due to the state's creation of a Renewable Energy Standard (RES) in 2017 and subsequent changes in energy purchasing by Vermont utilities. This means that greenhouse gas emissions can be significantly reduced via the electrification of thermal processes and transportation. In addition, energy efficiency reduces energy needs and saves money while making homes and businesses more comfortable.

Vermont GHG Emissions by Sector, 2018

Given this, municipalities often ask how they can improve building efficiency and electrify thermal heating and cooling. There are several key issues to understand when considering this question:

1. Land use regulations (AKA zoning) are not meant to regulate how buildings are constructed. There are a few zoning tools that can be used to reduce emissions and energy use on a development site. See the side bar.

2. Other measures can be utilized to regulate the environment inside of buildings. A municipal building code that is consistent with the State building code, and incorporates the "base" RBES (or Stretch Code), could ensure energy efficient construction at the local level. From CCRPC's perspective, this is the most logical way to do this; however, each situation will be different depending on the goal. See the table below for more information on the purpose and authority of various codes.

3. From a practical perspective, CCRPC advises municipalities to only adopt development requirements that they themselves can enforce. Please note that most Vermont municipalities likely do not have the capacity to locally administer and enforce a municipal building code. Given most VT municipalities do not and will not have the capacity for local enforcement, CCRPC has advocated for increased enforcement at the state level.

Examples of what you can do within your zoning regulations regarding efficiency:

Solar ready parking lots

Adopt a municipal zoning regulation to require that a minimum portion of parking lots be designed to accommodate solar power generation. This requirement could contain certain specific exemptions, so it doesn't interfere with the goals of a dense land use pattern.

Lighting standards to avoid over lighting

Require the use of LEDs or other efficient fixtures in outdoor lighting standards.

Require EV ready buildings

Adopt a specific use standard for multi-unit dwellings that requires those uses to provide every resident access to charging. See ACCD guide.

Make regulations friendly to electric vehicle charging equipment

Read these EVSE Friendly Regulations from ACCD.

Code & Purpose	Applicability	Authority to Adopt at Local Level	State Level
Building Code Fire and Life Safety (24 V.S.A. Chapter 83)	'Public buildings' generally include all buildings that contain any civic, commercial, industrial or residential (rental or condominium; ADUs are exempt). 20 V.S.A. 2730.	Yes (24 V.S.A. 3101). A Building Code Enforcement Officer is required.	Administered and enforced for "public buildings" via a construction permit from Division of Fire Safety.
Residential Base Energy Code (RBES) Minimum standard of energy efficiency for residential buildings	Detached one- and two-family dwellings, Multi-family (a building containing 3 units or more) and all other residential dwellings three stories or fewer in height. 30 V.S.A. 51	No clear authority in state statute for municipalities to adopt.	State code but doesn't have any permit or enforcement associated with it, therefore it lacks adequate enforcement. Currently builders self-certify. 30 V.S.A. 51
Stretch Energy Code Achieves greater energy savings than the base RBES	Detached one- and two-family dwellings, Multi-family (a building containing 3 units or more) and all other residential dwellings three stories or fewer in height. 30 V.S.A. 51	Authority for municipalities to adopt (30 V.S.A. 51 provides authority via 24 V.S.A. 4449). Can be adopted in zoning (as South Burlington has done); though building code would be best.	It is a state code, but only required in Act 250. It also lacks adequate enforcement for the same reason as above for RBES.
Commercial Building Energy Standards (CBES) Minimum energy conservation requirements	Commercial and high-rise residential buildings (4 stories or greater). 30 V.S.A. 53	No clear authority in state statute for municipalities to adopt.	State code but doesn't have any permit or enforcement associated with it, therefore it lacks adequate enforcement. Currently builders self-certify. There is more likelihood that commercial buildings meet the CBES code because most are designed by a licensed architect (source: VT CEP)
Net Zero Energy Code Requires buildings to be extremely efficient and to get all of its energy from renewable sources (onsite or purchasing from other sources).	N/A	Yes, provided the code is consistent with state building code (24 V.S.A. 3101).	The state isn't doing this currently; the state Comprehensive Energy Plan sets a target to achieve this standard for all new construction by 2030.

Examples from Chittenden County:

Set public safety standards

The Town of Colchester adopted its own set of building codes and safety standards to directly govern the construction, inspection, materials, alteration, relocation, demolition, equipment, repair, use occupancy, maintenance and operation of buildings, structures or premises, and for the prevention of fires. Learn More »

Discourage fossil fuel use in new buildings

The City of Burlington enacted a renewable heating ordinance that requires new buildings and major renovations to use renewable heating sources for 85% of their heating load, or pay a fee in lieu. See here. If a municipality is interested in a similar ordinance, municipal attorney research is recommended by the Vermont League of Cities and Towns (VLCT).

Adopt Stretch Code

South Burlington has adopted the Stretch Code as a part of their municipal zoning bylaw. This requirement mirrors the requirement that all new development subject to Act 250 comply with the Stretch Code. South Burlington is currently relying on self-certification.

Vermont Building Energy Standards »
Vermont Residential Building Standards Handbook »
State of Vermont Comprehensive Energy Plan »
Efficiency Vermont Net Zero Building Guide »
Vermont Building Energy Code Roadmap to Net Zero Energy Design by 2030 »
International Code Council for Net Zero Energy »

Contact

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