



Two Rivers-Ottawaquechee Regional Energy Efficiency and Conservation Program

Encouraging and Regulating Small-Scale Wind Energy Systems

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Overview

In the past decade energy has moved to the forefront of public discussion. According to the “Vermont Comprehensive Energy Plan”, 50% of Vermont’s energy demand is met by petroleum fuels. That percentage is similar nationally and has resulted in an American dependence on petroleum that is generally considered unsustainable. Many scientists have postulated that we will eventually reach a point at which it is no longer cost-effective to continue to extract oil for energy use. The possibility that we have reached a “tipping point” in terms of the availability of fossil fuels has led to the growth of alternative energy production at both a private and commercial level, including wind power.

Although energy policy is by and large determined at the national level, there is a role for energy planning at the Regional and Municipal level. For the Two Rivers-Ottawaquechee Regional Commission, it is our role to ensure that our municipalities are well represented at the state level when energy policy is set. Likewise, it is our role to ensure that new energy production facilities in our region do not have a negative regional impact. But most importantly, our role is to provide our communities with the tools they need to create good energy planning policy and implement that policy well.

This document is intended to introduce our communities to wind power and how it relates to planning and regulation at the municipal level.

Laws Relating to Municipal Regulation of Renewable Energy Devices

§4412(6) - Municipalities are limited in how they may apply height restrictions to renewable energy resource structures. *“The height of wind turbines with blades less than 20 feet in diameter, or rooftop solar collectors less than 10 feet high, any of which are mounted on complying structures, shall not be regulated unless the bylaws provide specific standards for regulation.”*

§4413(g) restricts bylaws from the prohibition or having the effect of prohibiting *“the installation of solar collectors...or other energy devices based on renewable resources.”*

§4413(b) removes public utility power generating facilities from municipal review under their bylaws. *“A bylaw under this chapter shall not regulate public utility power generating plants and transmission facilities regulated under 30 V.S.A. §248.”*

§4414(6) enables municipalities to adopt *“zoning and subdivision bylaws to encourage energy conservation and to protect and provide access to, among others, the collection or conversion of direct sunlight, wind, running water, organically derived fuels, including wood and agricultural sources, waste heat, and geothermal sources, including those recommendations contained in the adopted municipal plan, regional plan, or both. The bylaw shall establish a standard of review in conformance with the municipal plan provisions required pursuant to §4382(a)(9) of this title.”*

4414(8)(A)(iii) allows towns to waive dimensional requirements in order to *“Provide for energy conservation and renewable energy structures”* as long as they specify the process by which these waivers may be granted and appealed.

§4418(2)(C) - allows municipalities the option of creating subdivision regulations that have *“specific development standards to promote the conservation of energy or to permit the utilization of renewable energy resources, or both.”*

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Department of Public Service (DPS)

Commercial energy facilities and related projects are not subject to local land use regulations; instead they are required to obtain a “certificate of public good” from DPS. V.S.A. Title 30, Chapter 5, §248, outlines the rules regarding the DPS “certificate of public good.”

Commercial energy facilities are exempt from local regulation except to the extent outlined in §248(b)(1) which requires that any in-state power generation facility “...will not unduly interfere with the orderly development of the region **with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures outlined in the plan of any affected municipality.**” [Emphasis added]



Limitations on Regulation

State law is clear that towns may not regulate through zoning “public power generating plants and transmission facilities” which are regulated by the Department of Public Service under 30 V.S.A §248. Any facility regulated under §248 is required to obtain a “certificate of public good” (see sidebar). Under this system, the only opportunity a community has to be part of the process is during the comment period or when DPS reviews the community’s plan for compatibility. This reinforces the need to discuss wind generation within a municipal plan.

In the case of small-scale wind energy systems (SSWES), such as those that serve a single household, state law is less clear. Any SSWES that is connected to the power grid and is net-metering, is required to obtain a certificate of public good as well. Some planners have assumed that this implies that such facilities are then exempt from land use regulation and don’t require a permit. However, the language in 24 V.S.A. §4413(b) specifically exempts “public power generating plants”. There appears to be no clear definition of what constitutes a public power generation plant, therefore we are of the opinion that despite being connected to the grid, a small-scale wind energy system does not constitute a “public power generating plant” and therefore is subject to land use regulation to the extent allowed under 24 V.S.A. §4413(g).

This stance disagrees with the common legal conception that when connected to the grid via net-metering, a small-scale wind energy facility essentially becomes part of the “public utility”. We assert that despite the fact that a small-scale wind energy facility is potentially providing power to the public grid, it is still privately owned and not part of the public utility generating facilities. Communities will have to consider these opposing positions and make a determination as to what any regulations they adopt apply to, understanding that a decision to regulate SSWE facilities that are net-metering could be challenged in court.

When crafting new regulations, it is always sensible to have the proposed regulation reviewed by your community’s legal counsel. Because in this case there is a clear difference of opinion between the proposed language contained here and some in the legal community, we highly recommend any communities which choose to draft regulations for a small-scale wind energy facilities based on this model consult with their legal counsel. In the end, it is up to your community to decide how to approach the regulation of small scale wind energy systems.

Energy Planning Overview

Communities cannot have good regulations that help implement the utilization of wind energy without first having good planning. State statute [§4382(9)] requires that any community who opts to have a Municipal Plan include an energy chapter within that plan “*including an analysis of energy resources, needs, scarcities, costs and problems within the municipality, a statement of policy on the conservation of energy, including programs, such as thermal integrity standards for buildings, to implement that policy, a statement of policy on the development of renewable energy resources, a statement of policy on patterns and densities of land use likely to result in conservation of energy.*”

Given the growing need for our region to reduce its dependence on petroleum, we are advising all of our communities to include a sub-section on wind energy within the energy chapter of their town plans. In addition to the elements outlined in statute, we believe that it is important to discuss wind energy on both the residential and commercial scales. We are recommending that planners utilize the Vermont Energy Atlas (available through the internet) to help determine what areas of their community might be well suited to both scales of wind energy.

Residential or Small-Scale Wind Energy System Planning

A town plan that addresses small-scale wind energy systems (SSWES) should, first and foremost, be supportive of these small wind towers in most locations in their community, provided that they do not pose a potential threat to the public health. The Plan should discuss siting and location in a general manner. The key is to establish a basis and rationale for any land use regulations (zoning or subdivision). One of the most common debates with regard to wind towers is their impact on aesthetics. We must be careful to strike a balance between our desire to have Vermont remain as pristine as possible and our need for new energy sources. Residential scale wind energy is primarily represented by a single wind tower on an individual parcel and therefore has a fairly limited impact on aesthetics.

Plan policy should also address how height should be handled if land use regulations are implemented. Overly restrictive height requirements can have the effect of prohibiting wind towers even if that is not the actual intent of town planners. Again, concerns about aesthetics need to be balanced with the growing need to utilize more alternative energies.

Commercial or Large-Scale Wind Energy Planning

Municipalities are somewhat limited in how they can regulate large-scale commercial wind developments (this will be discussed later in this document), but that does not mean they should not be discussed. In fact, a clearly written statement in your municipal plan that addresses commercial wind energy generation may benefit your community in the event a large wind project is proposed.

We recommend that communities utilize the “Vermont Energy Atlas” to determine where a large-scale wind energy generation might be located within their community. The reality is that within the Two Rivers-Ottauquechee Regional Commission’s area, there are a limited number of locations that could be considered viable for large-scale commercial wind energy. However, it is important for our communities to be aware of where potential commercial wind energy sites could be proposed.

Once identified, these areas should be analyzed and discussed within the plan. Are they located in areas that have been identified as culturally or naturally significant to the community? If so, how should they be developed? What methods should be used to limit the impact on these important areas? If the areas that have been identified as potential wind generation sites are not in culturally or naturally significant areas, regulation should be relatively limited in scope, focusing primarily on public health and safety.

Wind Energy Basics

Turbine Size: On average, a typical American home would require a small turbine with a 5-kilowatt (kW) generating capacity to meet all of its electric needs. A machine of this size has a rotor diameter of approximately 18ft. The exact size to power a home can range from 2kW to 10kW based on a home’s energy use, average wind speeds and the turbine’s height above the ground.

Height: The average height of a small-scale wind energy turbine (of any capacity) is about 80ft. (about twice the size of a telephone pole), with a range of 30-140ft. Generator size and tower height are generally not related. For example, a 5kW turbine could be on a tower anywhere from 30-140ft. Tower height is generally determined by the topography and the need to access winds that are constant and non-turbulent.

Wind Strength: For wind power, wind speed (generally measured in miles per hour) is broken into seven classes. The range progresses from 10-11mph (Class One) to 19-25mph (Class Seven). Most utility (large-scale) wind developers look for areas with steady Class 4 or 5 winds, but Class 2 or 3 winds can power small-scale wind energy systems.

Source: “FAQ for Small Wind Systems”, American Wind Energy Association.

Noise

Most small wind turbines do not have gearboxes or other noisy mechanical systems, and manufacturers have made them quieter through better sound insulation, lower rotor speeds and adjustments to blade geometry.

Wind turbine noise is measured in two ways: sound power level is a measure of the acoustic strength of the source - the wind tower itself, and sound pressure level is a measure of the noise perceived at a particular location. Therefore a distance from the wind turbine rotor hub must be specified for the sound pressure level to be meaningful.

Source: "Permitting Small Wind Turbines: A Handbook" California Energy Commission, 2003

Other Nuisance Issues

Effects on Birds: The effects of Wind Energy Systems on birds has received much attention due to documented bird kills at a specific wind farm, located in Altamont Ridge, CA, which is located in a major raptor migration corridor. Small-Scale Wind Energy Systems kill fewer birds than a single domestic cat or sliding glass door.

Source: APA's Zoning Practice 7.08, "Urban Turbines", by Erica Heller

The narrative, goals, policies and recommendations in the Plan that relate to wind energy could have bearing on any wind generation facilities which fall under the Department of Public Service's review under section 248 of state statute (see sidebar on p.2). DPS is supposed to give "due consideration" to the recommendations of municipal planning commissions - the best way to ensure that such recommendations are clear and speak for the town is to include them in the energy chapter of your plan.

Regulating SSWE Generation at the Local Level

The policies and recommendations included in a Municipal Plan are intended to provide guidance to local planners when updating or creating land use regulations. We believe that all Small-scale residential wind energy facilities can be regulated through zoning and subdivision regulations, provided that such regulations follow the letter of the law (see sidebar).

There are three areas that commonly are addressed when communities apply regulations to small scale wind energy facilities, they are:

- Nuisances (noise)
- Aesthetics
- Safety

Nuisances (Noise)

One of the biggest concerns raised when residents object to a wind tower development is related to noise or acoustics. As with most mechanical devices, there is a certain amount of noise generated when a wind tower is operating. Most residential wind development focuses on a single wind tower, which is used to generate power for a single-family home. Unlike their larger relatives (used in commercial development), small scale wind towers generate a limited amount of noise (in part because there are seldom more than one or two of them in one location, and because of their size and design). The noise from a small-scale wind energy system that might be used in a residential setting (generally not more than 10kW) can be compared to a flag flapping in the wind.

It is advisable for communities to address noise as part of their permit requirements for a small-scale wind tower. The common requirement for noise is that under normal operation of the wind turbine, noise shall not exceed 60dBa when measured from structures on adjacent property or from the property line itself.

Aesthetics

As discussed previously, aesthetics is a very commonly voiced concern for citizens who object to wind energy developments. Because turbines must be mounted on tall towers to achieve their best performance and avoid damaging turbulence, visibility is unavoidable. There are individuals who find wind turbines aesthetically pleasing, but not everyone does; so local planners should consider the relative visual impacts of wind turbines. The reality is, however that for small-scale wind turbines, the visual impact is relatively limited. The right of applicants to generate their own local, clean energy must be weighed against those who object on aesthetic grounds. Local planners will also have to carefully weigh any aesthetic regulations for wind towers against the provisions of state statute which does not allow regulations which would prohibit "the installation of solar collectors...or other energy devices based on renewable resources." We inter-

pret “energy devices” to include small-scale wind energy systems.

We recommend our communities put limited restrictions on the location of SSWES. In some instances, it is reasonable to put additional restrictions on SSWESs in historic or culturally significant areas. These areas must be clearly identified within the Municipal Plan in order to be properly implemented within your land use regulations. We do not recommend that communities restrict SSWESs from ridgelines because doing so can reduce their efficiency and cost effectiveness.

Communities are not advised to require changes in color to “camouflage” wind generation facilities. The factor color for most turbines is matte gray, which is best for blending into a range of sky conditions. Likewise, screening requirements are not recommended because they can interfere with wind movement and reduce the effectiveness of the turbine.

Safety

The primary concern with regard to public safety and wind towers is the possibility that the tower could collapse. A properly installed wind turbine is highly unlikely to collapse, but it is certainly advisable for communities to consider adding language to their land use regulations that require some form of setback from neighboring properties which accounts for the height of the facility. For example, we suggest that towns include a provision that requires a distance of one and a half the height of the structure from neighboring properties. A waiver provision could be included that would allow this distance to be reduced if there was no possibility of damage to structures in the event of a collapse.

It is also important for regulations to require that the tower be protected from unwanted access. SSWESs may raise concerns that children or others will try to climb supporting structures and fall, causing injury or death. Towers that have ladders built into them for maintenance purposes should either be fenced, or the access ladders should begin at a height that is inaccessible by an individual on the ground. This is essentially how other similar structures are treated, such as HAM radio towers.

There have been concerns voiced about small-scale wind towers and potential conflicts with aircraft due to their height. Some communities insist on requiring lights similar to what can be seen on much larger communication towers. The FAA doesn't require lights on structures less than 200ft tall, and prohibits both commercial and small private aircrafts from flying lower than 1000 feet. Pilots cannot drop lower than 500 feet when approaching a runway. The only time a small wind turbine would be affected by FAA regulations is if it were to be located adjacent to an airport.

Other Nuisance Issues

Acoustical Interference: On Large-Scale Wind Energy Systems, the slow spinning blades can cause a thumping vibro-acoustical interference or cast flickering shadows. Faster rotating Small-Scale Wind Energy Systems do not cause the same effects. Radio signal interference is also associated with Large-Scale wind developments. Modern Small-Scale Wind Energy Systems are not metal, so they are “invisible” to radio frequency transmissions.

Ice Buildup: In northern climates, larger turbines can accumulate ice, which is then “thrown off” while they spin. However, chunks of ice on the smaller lightweight blades of a SSWES alter the aerodynamics so much as to slow or stop the blades from turning until they have melted. Studies produced in 1998 indicate the the risk of ice damage from a SSWES is lower than the risk of being struck by lightning.

Source: *APA's Zoning Practice* 7.08, “Urban Turbines”, by Erica Heller





Net-Metering

Net metering requires electric utilities to permit customers to generate their own power using small-scale renewable energy systems. The excess power they generate can be fed back to their utilities, actually running their electric meters backwards.

Any electrical utility customer in Vermont can net meter once they have obtained a Certificate of Public Good (CPG) from the Public Service Board (see below). Vermont's net metering law caps the size of net metering generators at 15 kilowatts of generation for the following renewable forms of energy generation: photovoltaic panels, wind turbines, and fuel cells (when fueled by renewable sources).

Utilities must allow net metered systems on a first-come, first-served basis to all customers until the cumulative generating capacity of all the net metering systems on its lines equals one percent of the company's peak demand.

Source: Vermont Department of Public Service

Sample Zoning Language

Given the lack of clearly written guidance in state statute with regard to SSWESs which are net-metering, it remains unclear as to whether or not a community can regulate anything more than those towers that are completely off-grid. However, we provide the following model language for our communities if they wish to step beyond the common opinion, and attempt to regulate these facilities.

In order to encourage the development of small-scale wind energy production in your community, towns will need to ensure that their land use regulations contain language which is effective and useful and does not prohibit or have the effect of prohibiting wind towers. Towns without zoning regulations can opt to create a stand-alone wind tower regulation that contains all of the language needed to implement the ordinance within it. Municipalities with zoning regulations can incorporate language into their existing ordinance, or create a stand-alone wind tower regulation.

Purpose

Municipalities should clearly state the purpose of their regulations, particularly if the ordinance will stand alone. The following is a sample purpose:

It is the purpose of this regulation to promote the safe, effective and efficient use of small-scale wind energy systems installed to reduce the on-site consumption of utility supplied electricity.

Definitions

All ordinances require clearly written definitions as the foundation of their language. Wind energy facilities should be specifically defined, in terms of scale and use, to ensure that the language of the ordinance legally applies to them. Broad definitions, such as "public or semi-public utilities" or "accessory uses" are not likely to apply to the full range of potential wind energy facilities. A specific definition of small-scale wind energy system provides the town with a basis for adoption and approval standards that are specific to this use. We suggest our communities consider the following definitions for a SSWES:

Small-scale Wind Energy System (SSWES) - *A wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 100kW and which is intended to primarily reduce on-site consumption of power. (Recommended definition)*

Or

Small-scale Wind Energy System (SSWES) - *means a wind energy system that*

1. *is used to generate electricity;*
2. *has a nameplate capacity of 100 kilowatts or less; and*
3. *has a total height of 170 feet or less.*

Tower - *The monopole or guyed monopole structure that supports a wind turbine.*

Total Height - The vertical distance from ground level to the tip of the wind turbine blade when it is at its highest point.

Tower Height - The height above grade of the fixed portion of the tower, excluding the wind turbine itself.

Wind Turbine - The blades and associated mechanical and electrical conversion components mounted on top of the tower whose purpose is to convert kinetic energy of the wind into rotation energy used to generate electricity.

Net-Metering - The difference between the electricity supplied over the electric distribution system and the electricity generated by the small-scale wind energy facility which is fed back into the electric distribution system over a billing period.

Or

Net-Metering: A method of metering the energy consumed and produced at a home or business that has its own renewable energy generator, such as a small-scale wind energy system. Under net metering, excess electricity produced by the wind turbine will spin the existing home or business electricity meter backwards, effectively banking the electricity until it is needed by the customer.

Permitting

Communities should consider whether or not a SSWES should be a permitted or conditional use. In some areas where lot size is large and the potential for issues regarding health and safety are minimal, it may be advisable to make SSWES a permitted use (see sidebar for the difference between permitted and conditional use).

In the event that wind towers are in an area where health, safety and other issues are concerns, it is advisable for communities to designate a SSWES as a conditional use. In doing so, the community is able to ensure that their review board will have the opportunity to analyze a proposed SSWES on a lot-by-lot basis, acknowledging that no two developments are the same. For example, if a SSWES is proposed in an area that is highly populated, some conditions (as clearly defined by the land use regulations) may need to be applied in order to ensure public health and safety.

It would be reasonable for a community to designate SSWESs as permitted in some areas but conditional in others based on the specific rules of the district in which it is proposed. However, it is important to remember that state statute does not allow municipalities to “prohibit or have the effect of prohibiting” renewable energy systems in their community. To ensure that this part of statute is not violated, we recommend that all communities adopt waiver standards which allow for the waiving of dimensional standards for renewable energy systems.

Permit Requirements for Safety

The following sample language should be considered for all SSWESs regardless of whether or not they are permitted uses:

Rated Capacity

The rated capacity as defined in our sample definition could be changed based on the scale of wind generation facility the community deems is appropriate. The following is a list of typically sized turbines and their uses:

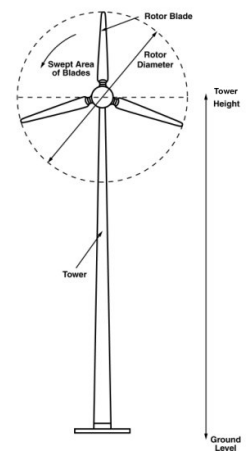
2-10 kW: Residential

10-20 kW: Agricultural Farm

50 kW: Small Municipal Operation

100kW: Largest facility that could be offered a certificate of public good and still Net-Meter.

Note that the Department of Public Service limits most Net-Metering projects to only 15kW.



Permitted Use vs. Conditional Use

A permitted use is one that, provided the standards of the land use regulations are met, can be given a permit by the Administrative Officer without any further review. A permitted use is NOT exempt from the standards of the regulation. Note that in some communities, a permitted use MAY require site plan review. Check with your zoning administrator to be sure.

A conditional use is one that must go through a review process which should be clearly set forth in the municipal land use regulations. Conditional use review is the responsibility of the Appropriate Municipal Panel (either the Zoning Board of Adjustment or Development Review Board, depending on your community). The appropriate municipal panel will review the proposed application using the language outlined in §4414(3) and whatever additional review criteria have been set forth in the town's land use regulations. Using this process, the Appropriate Municipal Panel may apply conditions to the permit if it is granted.

Minimum Distance: *The minimum distance between the ground and any part of the rotor blade shall be thirty (30) feet.*

Climbing Access: *To limit climbing access, a fence six feet high with a locking portal shall be placed around the facility's tower base or the tower climbing apparatus shall be limited to no lower than 12 feet from the ground, or the facility's tower may be mounted on a roof top.*

Or

Climbing Access: *Wind towers shall not be climbable up to 12 feet above ground level.*

And

Turbine Safety: *All turbines shall have an automatic braking, governing or feathering system to prevent uncontrolled rotation, overspeeding and excessive pressure on the tower structure, rotor blades and turbine components.*

Permit Requirements for Siting and Installation

The setback requirements for wind towers will vary from community to community. As mentioned earlier, the biggest safety issue would be the rare instance in which the tower collapsed and fell on adjoining properties. However, there are other issues related to the equipment itself and its relationship to the power grid that might want to be considered.

Setbacks: *The minimum setback distance between each wind turbine tower and all surrounding property lines, overhead or utility transmission lines, other wind turbine towers, electrical substations, public roads and dwellings shall be equal to no less than 1.5 times the total height of the small-scale wind energy system. (note that this provision requires that "total height" be defined as in the sample above).*

Or

Setbacks: *Each small-scale wind energy system shall be set back from the nearest property line a distance no less than 1.1 times its total height, unless appropriate easements are secured from adjacent property owners.*

Or

Setbacks: *No part of the small-scale wind energy system, including guy wire anchors, may extend closer than ten (10) feet to the property boundaries of the installation site.*

And

Access Roads: *Use existing roads to provide access to the small-scale wind energy system site, or if new roads are needed, minimize the amount of land used for*

new roads and locate them so as to minimize adverse environmental and visual impacts.

Power Lines: *Electrical controls and control wiring and power lines shall be wireless or underground except where wiring is brought together for connection to the transmission or distribution network. Such above-ground wiring shall be located adjacent to that network.*

Utility Connection Requirements: *The small-scale wind energy system, if interconnected to a utility system for the purpose of net-metering, shall meet the requirements for interconnection and operation as set forth in the electric utility's then current service regulations applicable to small-scale wind energy facilities.*

Permit Requirements for Nuisances

The primary nuisance associated with small-scale wind energy generation is noise. For large-scale wind energy systems, more provisions would be required than outlined below.

Noise: *Noise created by small-scale wind energy systems shall not exceed 60dBA, as measured at the closest neighboring inhabited dwelling. This level may be exceeded during short-term events such as severe wind storms.*

Or

Noise: *Noise created by small-scale wind energy systems shall not exceed 60dBA, as measured at the nearest adjacent property line. This level may be exceeded during short-term events such as severe wind storms.*

Permit Requirements for Aesthetics

While we do not advocate for the inclusion of aesthetic requirements for small-scale wind energy systems in municipal land use regulations, we recognize that some communities may choose to do so. The following are a small sample of potential aesthetic regulations for SSWES:

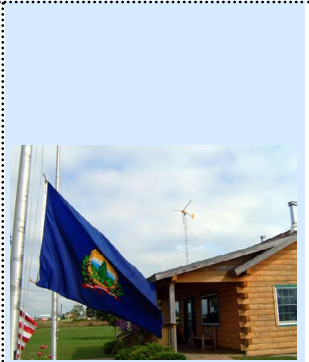
Design: *All small-scale wind energy system buildings and related structures shall, to the extent reasonably possible, use materials, colors, textures, screening and landscaping that will blend the facility in to the natural setting and existing environment.*

And/Or

Visual Impacts: *Small-scale wind energy facilities shall be designed and located to reasonably minimize visual impacts from neighboring residential areas.*

Scenic Impacts: *Small-scale wind energy facilities shall not significantly impair a scenic vista or scenic corridor as identified in the Municipal/Town Plan.*

Ridgelines: *Where wind characteristics permit, wind towers shall be located so as to minimize breaking the silhouette of ridgelines as seen from public roads.*





About this Document

This document was produced by staff at the Two Rivers-Ottauquechee Regional Commission with funding from the VT Department of Public Service and The U.S. Department of Energy.

It is intended as a guide for communities. We strongly recommend legal review of land use regulations created using this model language. As with all planning documents, seek public input before implementing this suggested bylaw language.



Waiver Language

Municipalities are enabled in state statute to grant “waivers” to reduce dimensional requirements. The rules governing waivers are established through a zoning ordinance and are not intended to be as stringent as a variance. In order to avoid violating the provisions of 24 V.S.A. §4413(b), we strongly recommend communities adopt waiver standards that apply to renewable energy generation systems. See the following sample language:

Waivers may be granted by the Development Review Board, after a formal public hearing, to reduce any dimensional requirements of any district if the proposed development meets the criteria in section [insert section number here].

In all districts, waivers may be granted after a hearing by the Development Review Board if the waiver will not result in a greater than 50% decrease in any dimensional requirement (provided that the structure does not enter the right-of-way), and any one or more of the following criteria are met:

- 1. The proposed development conforms to the existing development patterns of the district; or*
- 2. The proposed development will cluster development and more effectively preserve open land, forest land, or scenic vistas; or*
- 3. The proposed development will result in permanently affordable housing units.*
- 4. provides for mitigation through design, screening or other reasonable remedy; or*
- 5. provides for energy conservation and renewable energy structures; or*
- 6. cannot be reasonably accommodated within the dimensional standards of the Development Bylaw.*

Renewable energy generation facilities are not subject to the 50% maximum decrease provision of this waiver standard, and in districts where setbacks would not allow the placement of such a facility, the dimensional standards shall be reduced to the minimum amount necessary to accommodate the structure.

Conclusion

Wind energy generation is a single part of a larger picture that will be the future of energy production in Vermont. It is hoped that through the implementation of alternative energy production on both the small and large scale, we can slowly reduce our dependence on petroleum as our primary energy source. The model language contained in this document is an important step in encouraging wind energy generation in your community.

The suggested language in this document is intended to be used to help guide local planning decisions, but does not represent the only possible approaches a community can take. Staff at the Two Rivers-Ottauquechee Regional Commission is available to assist your community with energy planning and the implementation of energy related land use regulations. For more information on what services we can offer, please contact Chris Sargent, AICP, Senior Planner at csargent@trorc.org or at 802-457-3188 ext 12.