

ADVOCATING FOR RENEWABLE ENERGY + CONSERVATION

albemarle county wind policy

Global Sustainability, Spring 2013

Prof. Phoebe Crisman

Workshop Leader: Sarah Beth McKay

Team members: Isabella Artilles, Kelly Lahvic, Chris Haberland, Trevor Gopnik, Austin Dabney, Sam Reid

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ABSTRACT

The main objective of our team was to amend the policy in Albemarle County to facilitate the installation and ownership of residential wind turbines. Naturally, this brought about several subsequent objectives that we needed to accomplish in order to achieve our goal. These secondary objectives included researching the conditions of Albemarle County (viability for wind energy, current policy on wind turbines, past environmental legislation), drafting a proposal for changed policy based on the knowledge gained from our research, and establishing contact with the Board of Supervisors. Depending on the outcome of our communication with the local government, we may take additional steps to attempt to have our proposed ordinance adopted.

Having accomplished the majority of our secondary steps, we now have adequate knowledge of current conditions and support for changed policy. We researched the wind potential of the county based on maps of annual average wind speed (provided by the National Renewable Energy Laboratory, Figure 1) and the minimum requirements for effective turbine use. Many articles were found documenting previous debates surrounding residential wind turbine use in Albemarle (specifically, a dispute between the county and a resident complaining about a structure that was illegal at the time), as well as the actual administrative policies. Professor William Shobe in the Frank Batten School of Public Policy offered us additional council on our proposal. We obtained other information and connections by contacting directors of the Virginia Center for Wind Energy, including Remy Pangle-Marten and Jonathan Miles. Mr. Miles, who lives in Albemarle, was able to advise us on our approach to the proposal. He also was able to connect us with the chair of the Board of Supervisors, with whom he has interacted previously. In this paper, we will detail the process of how we arrived at these objectives, barriers we have faced, what progress we have made, and an evaluation of our approach.

INTRODUCTION

Our group worked with Albemarle County's policy in order to change its restrictive stipulations on wind turbine installations. Albemarle County has been reluctant to allow wind turbines as an alternative source of energy both for primary and secondary use in all of the county's zoning districts. According to a 2009 Executive Summary of the county, the Staff and the Planning Commission has not permitted large commercial wind turbines for use in Albemarle County. However, in 2009 the Albemarle County Board of Supervisors voted to allow residents to use wind turbines for personal use only. Small turbines are allowed to power residents' homes, but the owner needs a permit if they wish to build one. Our goals for this project included reviewing Albemarle County's ordinances on small wind turbines, proposing a new ordinance, and educating the county about wind energy and requirements for residents can obtain a permit for a wind turbine.

The Virginia Center for Wind Energy (VCWE) has been instrumental in helping our group to accomplish these goals by leveraging numerous resources that have been applied to other counties in Virginia. With the help of the VCWE, we found that the process to apply for a permit to install a personal wind turbine in Albemarle County was extremely vague. With the help of the VCWE's Associate Director and Curriculum Coordinator, Remy Pangle-Martens, we realized that our efforts would be most effective if we focused on standardizing the process of acquiring and building a small wind turbine by reviewing Albemarle County's ordinance on small wind turbines as well as educating residents of our county on the benefits and feasibility of wind energy utilization.

benefits of wind turbine installation and background research

When exploring the possibility of utilizing residential wind power in Albemarle County, it was important to look into cost effectiveness of utilizing local wind resources. Wind turbines can cost anywhere between \$6,000 and \$20,000 after a 30% federal rebate, depending on the size of the turbine. Before paying any amount, however, homeowners are concerned with the amount of time it will take to recover the installation costs. The amount of money a wind turbine will save in utility payments reflects the amount of electricity it generates, which is in turn determined by the amount of wind in the specified area.

The map from the National Renewable Energy Laboratory (Figure 1) shows that most of Albemarle County has an annual average of 5 m/s or below, which is roughly 9 mph. They also list 12 mph as an ideal minimum wind speed for a residential wind turbine to generate maximum electricity, while acknowledging that wind slightly below this speed can still allow a wind turbine to generate electricity. Since the numbers shown on the map indicate annual averages and not maximums, we know that average wind speed reaches the necessary threshold for at least part of the year in Albemarle County.

The Department of Energy claims that a wind turbine can provide "as much energy as a home requires." As of 2011, the average monthly electric bill for Dominion Power customers was just below \$110 (Tidewater News). Using these numbers as ballpark figures (especially since Albemarle lacks abundant wind), it could take anywhere between 4-15 years to pay off the cost of installation (once again, dependent upon the original cost, electric usage, and efficiency of turbine). The life expectancy of a typical residential turbine is about twenty years. This makes it questionable as to whether one could recover the installation costs of a residential turbine in a low-wind area like Albemarle County.

The costs could be recovered more quickly if there were sufficient wind resources to utilize the Net Metering program offered in Virginia and most other states. This program allows residential systems that produce more energy than they use to sell that energy back to the power company. Essentially, the meter runs backwards, and the net total is credited to the customer's next utilities bill. There are currently limits to

the capacity of this program (20 kW for residential systems, with those with greater than 10 kW paying a monthly standby fee), but it helps to make alternative energy a more viable and attractive option (Database for State Incentives for Renewables & Efficiency – U.S. Department of Energy).

Today, there are federal tax credits provided to residents and companies to support their renewable energy equipment installation and their improved energy efficiency in general. At the state level, the Virginia Department of Mines, Minerals and Energy has allocated up to \$15 million to provide rebates for renewable energy equipment. With these programs, residents of Virginia have the opportunity to take advantage of the financial incentives to make the entire state a greener place to live (Virginia Cooperative Extension).

Santa Clara County, California, is one of many counties in the United States that is giving its residents and business owners the opportunity to benefit from incentives from all three levels of government (local, state, and federal) rather than just two. The mission of their “Community Energy Program” is to both provide services to promote sustainability through rebates and also to provide education so as to allow their residents to make well informed choices (Community Energy Program, Santa Clara County). Taking advantage of these rebates also helps local county employees, as the rebates follow building “Energy Upgrades” which are carried out by a Santa Clara County contractor.

In Montgomery County, Maryland, the local government has set up a similar incentive program to provide financial support for energy efficient retrofitting of residences, non-profit institutions, and commercial properties. As evidenced in Montgomery, funding is the main factor holding back these plans. Currently, the county has rebates for energy efficient households, but the property tax credits for those homes using renewable energy equipment such as wind turbines and solar panels have recently been cut due to high level of demand and subsequent lack of funding (Department of Environmental Protection, Montgomery County). This, along many other obstacles such as lack of funding, has hindered rebate and tax reduction programs in the past in Virginia’s counties.

Unfortunately, similar county rebates and tax reductions that benefit renewable energy equipment installations have not made their way to any counties in Virginia. Some areas in Northern Virginia have implemented programs to increase energy efficiency without reliance on renewables, however. For example, Fairfax County has seen tax reductions on energy-efficient appliances such as water heaters, furnaces and window installations (EnergySavvy). Despite this progress, there are still no financial incentives for a solar panel or wind turbine installation. Albemarle County residents would be more inclined to install renewable energy equipment and become more environmentally friendly if the county government subsidized the costs of such green activities.

BODY

alternative ideas

Originally, our group was considering many alternatives to our current goal of amending the wind turbine ordinance in Albemarle County. Our first idea was to find a way to bring industrial wind energy investment to Albemarle County by promoting policies that allowed for mass-scale wind farms to establish operations within the county limits. However, our research showed that there are insufficient economic incentives for wind energy investment in Albemarle County due to low wind speed.

Following this discovery, we looked into outsourcing wind energy from other states where there is greater capacity for wind power generation. The idea was to explore the possibility of drawing at least some of our grid's power from wind farms in states with higher average wind speeds. We discovered that Dominion Power is already investing heavily in wind power projects in West Virginia and other areas (see Renewable Energy and Green Power in bibliography). Not only did we find that there was power coming to our grid from out-of-state wind farms, but also that there was a way to voluntarily opt-in and support Dominion's preexisting Green Power program, which is detailed below. We settled on the idea of advocating for this program and continuing to pursue changes in the residential wind turbine ordinance because these are two avenues through which residents can personally make changes in energy use and contribute to sustainability. While incentives like the ones we discovered in Santa Clara and Montgomery County are ideal, Albemarle County would need a clarified ordinance for installing wind turbines before attempting to implement incentives for those turbines.

dominion green power

Dominion's Green Power program presents an extremely affordable way for residents of Albemarle County to support the development of renewable energy production in Virginia and surrounding states. As we discovered, there is little potential for industrial wind farms in Albemarle County and residential wind turbines can be too much of a financial and physical burden for many residents. The Green Power Program is the alternative for residents who would like to remain energy efficient without the difficulties of wind turbine construction.

Dominion takes advantage of three types of renewable energy sources for this program: wind, solar, and biomass. For customers, there are two Green Power options that can be purchased and added onto their monthly electricity bill. The first option is the "Block Option." This involves a two-dollar fixed monthly purchase that guarantees 154 kilowatt-hours of renewable energy delivered to Dominion's power pool on the residents' behalf. For a typical home, more than 154 kilowatt-hours will be used per month, which is why there is a second option, the 100% option. This choice involves purchasing enough renewable energy certificates to match 100% of one's monthly electricity use. The end cost of this option is determined by adding an additional 1.3 cents (\$0.013) per kilowatt hour of electricity used to the monthly bill. Both of these options are available for businesses as well as residents. Businesses can benefit from this program greatly, as "green businesses" are becoming a huge trend. These participating businesses can use the program to help get their buildings LEED certified, help reach their sustainability goals, and use banners and signs to communicate their environmental support to customers. Potential customers have no need to hesitate before making this commitment, as there are no upfront costs, no contracts to sign, and you can make changes at any time if the additional price becomes a burden. The largest benefit of this program is the benefit to the environment.

The development and greater use of renewable energy result in a smaller amount of energy dependence on nonrenewable resources such as crude oil and coal. These sources take millions of years to

naturally regenerate, so our sources of such items are depleting. Their use in energy production is also an extremely polluting process. According to Dominion, for a business or resident to add just \$10 more to their electricity bill a month, they are able to do the environmental equivalent of taking one car off of the road per year. Our group is hoping to make the information on this Green Power Program known for the residents and businesses of Albemarle County. Currently the information is incredibly challenging to find on the county website, and Dominion Power has just recently begun outreach efforts to inform more Virginia residents and businesses of the program. Through talking with friends, family, and fellow students, we found that hardly anyone knew about the program. Of those few, we found no one who was taking advantage of the program, because they did not know how it worked. As a result, we created a brochure that will hopefully be displayed in the county offices and possibly even real estate offices (see first draft and final draft, Figures 2 and 3, respectively). This brochure describes all of the options and advantages to the program, as well as the contact information for any questions. One of our goals for meeting with the Board of Supervisors is persuading them to add this information to the county webpage. This outreach will inform Albemarle County residents of an inexpensive renewable energy option for those who are not able to install residential wind turbines.

small wind turbine ordinance

Albemarle County currently has an ordinance to allow for small residential wind turbines. This ordinance outlines the requirements for the construction of the wind turbine to be approved as well as the procedure for approval or denial. However, after reading the ordinance and receiving advice from Remy Pangle-Marten from the Virginia Center for Wind Energy, we noticed the ordinance is incomplete. It is vague and its great deal of gray area can hinder residents from getting construction permits because of issues of clarification. Remy raised the concern that the ordinance is not specific enough about the type of wind turbine and places where it can be built. She expressed that this might be the result of the limited knowledge the county has on this subject.

Given our background research and the Virginia Center for Wind Energy resources we decided to revise the current ordinance with the help of a model ordinance that the VCWE sent us. We have included the current ordinance (Figure 4) and our proposed improvements (Figure 5). Hopefully this will make the ordinance specific enough for residents to use as a resource and know exactly what they need to do in order to be able to install a residential turbine.

Some of the changes we proposed making to the ordinance were:

- Including a definitions section of the various terms used throughout the ordinance
- Including a detailed process of application
- Detailing the required documents
- Adding an expiration date to the permit
- Improve the detail of the requirements
- Detailing process of decommissioning

All of these changes can be found in the Appendices in red. On certain areas of the ordinance we only expanded or added some detail to the claims. The ordinance seemed to have a general idea and a good direction but it lacked a great deal of detail as well as some other important steps. We believe this will make the process more transparent and serve as a resource for residents interested in pursuing renewable energy sources. We also feel confident with this new ordinance since it is based off the model ordinance sent to us by the Virginia Center for Wind Energy, which has extensive experience working with counties throughout Virginia to improve and/or create ordinances for wind turbines of all scales.

Recently, we were able to have a phone conversation with Jonathan Miles, during which we discussed our proposed changes to the ordinance, Professor Shobe's suggestion to pursue industrial wind energy, and the best method of contacting the Board of Supervisors to present our ideas. He confirmed our findings that Albemarle's wind resources would support residential wind turbines more adequately than they would industrial ones. Additionally, he offered to set up a meeting between us and the chair of the Board of Supervisors, Ann Mallek, and asked us to send him a letter which he would pass along to her (Figure 6). The letter describes who we are, what our Global Sustainability project is, and what our goals are for changing the ordinance. Since sending him this letter, we have yet to hear back about a time that Chairwoman Mallek will be able to meet with us.

CONCLUSION

lessons learned, barriers, and future work

So far we have made significant progress in examining and revising the Albemarle County ordinance that regulates the building of wind turbines. If our new ordinance were put in place, the process for anybody that wanted to build a wind turbine would be much easier to follow. So far, we have measured our success from the clarity of our proposed ordinance. A more tangible measure of success will be whether or not our proposal is implemented.

One barrier we faced was Albemarle County's lack of particularly ideal wind resources. Even if this ordinance were changed to make the development of personal turbines easier, it is unclear how much demand there would be for these resources in such a low-wind area of the state. Wind turbines in residential areas with higher wind potential would almost certainly obstruct scenic views. As we move forward, we will continue to rely on the advice of experts, specifically Jonathan Miles, with whom it has been difficult to maintain contact. Additionally, we will distribute educational material to let residents know about the wind energy opportunities available to them, and attempt to convince the county Board of Supervisors to review the wind ordinance in question.

We believe that we have become as knowledgeable as possible before contacting the Board of Supervisors in order to answer any potential questions they might have on wind turbines. Knowledge about the technicalities of property regulations in Albemarle County and the specifics of turbine construction are an invaluable resource. In addition, it has been useful to obtain support from various sources of authority, including Professor Shobe and the Virginia Center for Wind Energy (including Jonathan Miles, who is a resident of Albemarle County). With backing from a permanent resident and experts like Professor Shobe and the VCWE, our proposal carries much more weight than it would if we presented it as undergraduate students.

Our next steps—distributing our Dominion brochure and presenting our proposal to the Board—will occur as soon as possible. The entire group will attempt to attend the meeting with the chair of the Board of Supervisors. Barriers to this approach, however, include the termination of the semester and many of our group members' departure from Charlottesville. As far as our approach to the Dominion Green Power advocacy, we will bring several copies of our brochure with us to present to the Board and to Mr. Miles for distribution at the county offices and at the VCWE, respectively. We will also look into providing these materials to local realty companies and landlords in order to distribute to their incoming tenants.

APPENDICES

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acknowledgement of advisement

Remy Pangle-Marten
Associate Director and Curriculum Coordinator
Virginia Center for Wind Energy

Professor William Shobe
Director, Center for Economic and Policy Studies
Weldon Cooper Center for Public Service

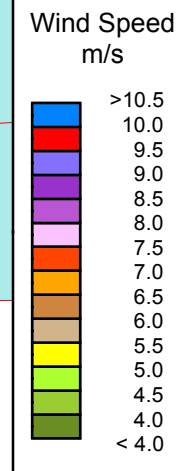
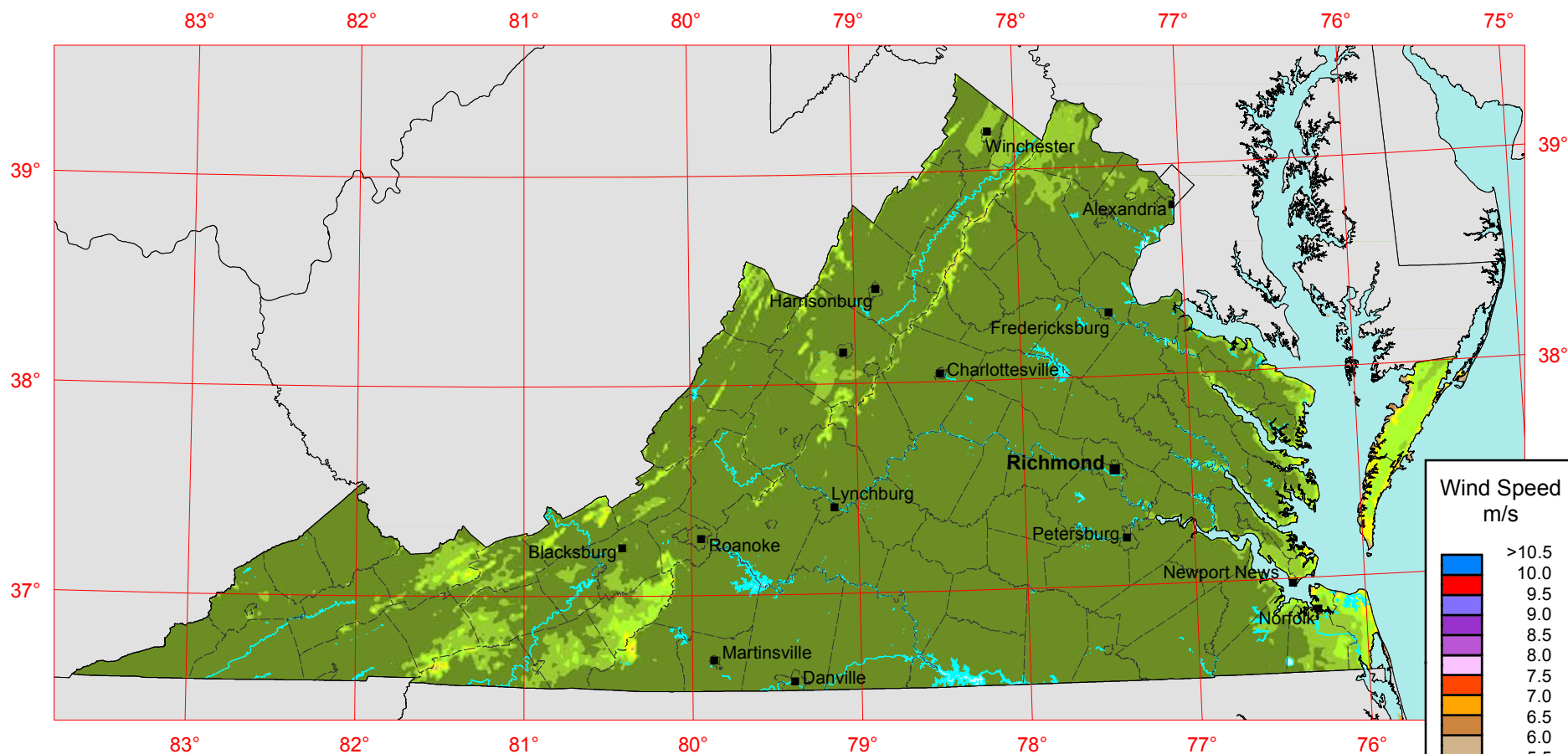
Jonathan Miles
Director
Virginia Center for Wind Energy

Deanna Zimmerman
Outreach Coordinator
Virginia Center for Wind Energy

Lindsay Check Snoddy
Environmental Compliance Manager
Albemarle County Public Schools

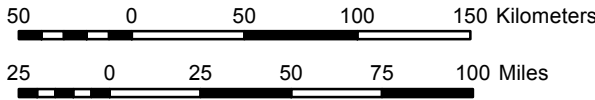
figure 1

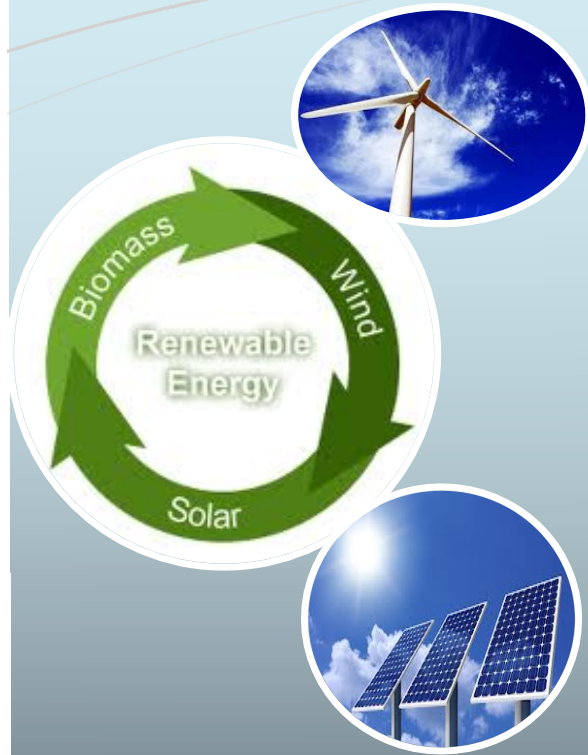
Virginia - Annual Average Wind Speed at 30 m



The average wind speeds indicated on this map are model-derived estimates that may not represent the true wind resource at any given location. Small terrain features, vegetation, buildings, and atmospheric effects may cause the wind speed to depart from the map estimates. Expert advice should be sought in placing wind turbines and estimating their energy production.

Source: Wind resource estimates developed by AWS Truepower, LLC. Web: <http://www.awstruepower.com>. Map developed by NREL. Spatial resolution of wind resource data: 2.0 km. Projection: UTM Zone 17 WGS84.

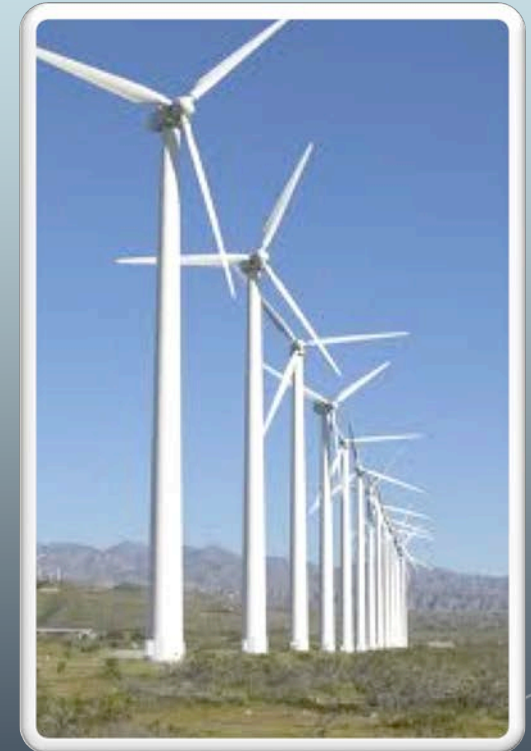




Benefits for Virginia Businesses

- Don't just keep it to yourself; communicate your environmental commitment to your customers! They'll admire and appreciate your environmental support.
- Help your building get LEED certified; RECs sold through the Green Power program quality for LEED credit.
- Work to meet your business' environmental and sustainability goals in an affordable way
- Be an engaged leader in the Albemarle community by helping to expand Virginia's renewable energy resources.

Dominion Green Power



Want to sign up
or learn more?

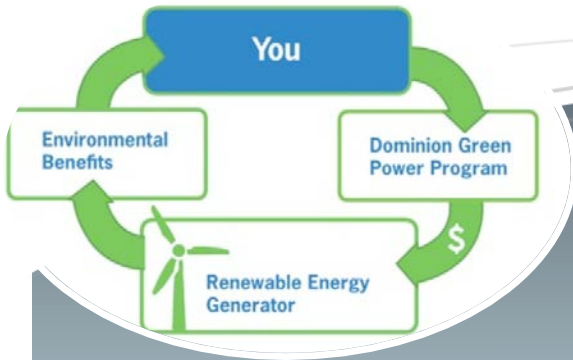
Visit:

<https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/green-power.jsp>



Dominion's Green Power Program

Dominion Power Company presents an affordable option to allow Virginia residents and business owners to support the development of renewable energy production in Virginia and the surrounding region. The program helps customers to meet their sustainability goals.



What is it?

Renewable energy sources supported by Dominion include wind, solar, and biomass facilities. By enrolling with the Green Power Program, Virginia residents are guaranteed that Renewable Energy Certificates (RECs) will be purchased on their behalf. An REC is similar to a receipt that guarantees that one megawatt-hour of renewable energy was generated and delivered to the Dominion power grid. This program is a way for residents and business owners to advance renewable energy development.

What are my Green Power options?

There are two participation options:

1) Block Option: The block option involves a purchase of a fixed \$2 increment per monthly bill. This \$2 amount guarantees 154 kilowatt-hours of renewable energy delivered to Dominion's power pool on behalf of your business or residence.

2) 100% Option: The 100% option involves a purchase of renewable energy certificates to match 100% of your monthly electricity use. The cost for this option is determined by adding an additional \$0.013 per kilowatt-hour of electricity used to the monthly bill.

There is no need for hesitation, as there are no upfront investments, no contracts to sign, no changes to your electricity facilities, and you can make changes at any time!



How does this help the environment?

The development of and greater use of renewable energy result in a smaller amount of electricity generation from nonrenewable resources such as coal and oil that are depleting and polluting the environment. By adding just \$10 per month, Virginia residents and businesses do the environment the equivalent benefit of taking one car off of the road per year.



Benefits for Albemarle County Businesses

- Don't just keep it to yourself; communicate your environmental commitment to your customers! They'll admire and appreciate your environmental support.
- Help your building get LEED certified; RECs sold through the Green Power program qualify for LEED credit.
- Work to meet your business' environmental and sustainability goals in an affordable way
- Be an engaged leader in the Albemarle community by helping to expand Virginia's renewable energy resources.

Dominion Green Power



Want to sign up or learn more?

Visit:

<https://www.dom.com/dominion-virginia-power/customer-service/energy-conservation/green-power.jsp>

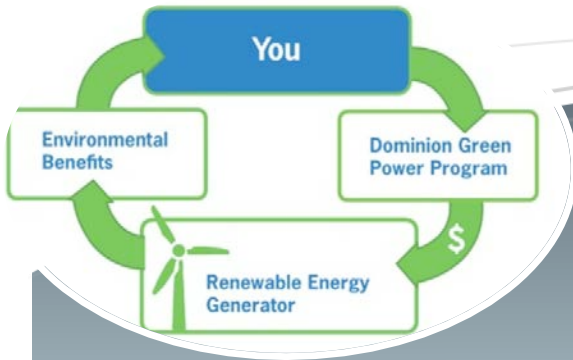


Smartphone QR code



Dominion's Green Power Program

Dominion Power Company presents an affordable option to allow Albemarle County residents and business owners to support the development of renewable energy production in Virginia and the surrounding region. The program helps customers all over Virginia to meet their sustainability goals.



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There are no upfront investments, no contracts to sign, no changes to your electricity facilities, and you can make changes at any time!



How does this help the environment?

The development and greater use of renewable energy result in a smaller amount of electricity generation from nonrenewable resources such as coal and oil that are depleting and polluting the environment. By adding just \$10 per month, Albemarle County residents and businesses do the environment the equivalent benefit of taking one car off of the road per year.

5.1.46 SMALL WIND TURBINES

The purpose of this section 5.1.46 is to authorize small wind turbines as an accessory use in order to promote renewable energy. Each small wind turbine shall be subject to the following, as applicable:

a. **Application for approval.** In conjunction with the submittal of a building permit application for a small wind turbine, the applicant shall submit the following information:

1. A **plat of the parcel** showing the lot lines, the location of the proposed small wind turbine and the setbacks to the lot lines.
2. Plans that show the total height of the proposed structure, including rotors or turbine blades and that show compliance with the building code.

b. *Requirements.* Each small wind turbine shall be subject to the following:

1. *Primary purpose.* The primary purpose of the small wind turbine shall be to support and provide power for one or more authorized uses of the property; provided that nothing herein shall prohibit the owner from connecting the small wind turbine to a public utility and selling surplus power to the utility.
2. *Location.* Notwithstanding section 4.2.3.1 of this chapter, the small wind turbine may be located in an area on a lot other than a building site. A small wind turbine shall not be located within a historic district or within a ridge area.
3. *Setbacks.* The small wind turbine shall not be located closer in distance to any lot line than one hundred and fifty (150) feet. The agent may authorize a small wind turbine to be located closer to any lot line if the applicant obtains an easement or other recordable document showing agreement between the lot owners that is acceptable to the county attorney and, where applicable, that prohibits development on the portion of the abutting parcel sharing the common lot line that is within the small wind turbine's fall zone. If the right-of-way for a public street is within the fall zone, the Virginia Department of Transportation shall be included in the staff review, in lieu of recording an easement or other document.

4. Height. The small wind turbine shall not exceed the maximum height permitted for structures within the applicable zoning district.

5. Lighting. The small wind turbine shall have no lighting.

6. *Collocation.* The small wind turbine shall not have personal wireless service facilities collocated upon it.

7. *Removal.* The small wind turbine shall be disassembled and removed from the property within ninety (90) days after the date the use(s) to which it provides power is discontinued or its use to generate power is discontinued. If the agent determines at any time that surety is required to guarantee that the small wind turbine will be removed as required, the agent may require that the owner submit a certified check, a bond with surety, or a letter of credit, in an amount sufficient for, and conditioned upon, the removal of the small wind turbine. The type and form of the surety guarantee shall be to the satisfaction of the agent and the county attorney.

c. *Approval.* The agent is authorized to review and approve small wind turbines. The agent shall act on the application before the building permit application or site plan for the small wind turbine is approved. Notwithstanding subsection 5.1, no requirement of subsection 5.1.46(b) may be waived or modified for a small wind turbine.

d. Denial. If the agent denies an application, it shall identify which requirements were not satisfied and inform the applicant of what needs to be done to satisfy each requirement.

5.1.16 SMALL WIND TURBINES

The purpose of this section 5.1.46 is to authorize the construction, operation, and decommissioning of small wind turbines as an accessory use in order to promote renewable energy. Each small wind turbine shall be subject to the following, as applicable.

a. Definitions

Small wind turbine: a single wind turbine with a rated capacity of 10 kW or less, consists of a single turbine and associated control and/or conversion electronics, and may be building-mounted (such as on a rooftop) or mounted on a tower.

Rated Capacity: the rated output of electric power production equipment specified by the manufacturer, also referred to as “nameplate capacity”

Tower: a structure installed on the ground and on which the small wind turbine is mounted

Small wind turbine height: the distance measured from grade to the highest point of the turbine rotor or tip of the turbine blade when it reaches its highest elevation.

b. Application for approval. In conjunction with the submittal of a building permit application for a small wind turbine, the applicant shall submit the following information:

1.A plat that illustrates

- a. Property lines, physical dimensions, and acreage of the property
- b. Location, dimensions, and types of existing structures on the property
- c. Location of the proposed small wind turbine and tower
- d. The right-of-way of any public and private road that is contiguous with or crossing the property**
- e. Any overhead utility lines**

2.Small wind turbine specifications, including manufacturer and model, rated capacity, rotor diameter, tower height and overall small wind turbine height that show compliance with the building code.

3.Evidence that the electric utility service provider to the site has been informed of the applicant's intent to install an interconnected customer-owned electricity generator, unless the applicant intends, and so states on the application, that the system will not be connected to the electricity grid. This notification will take place by having the electric utility provider sign the permit application. This signature does not construe approval for net metering by the electric utility.

4.Proof of adequate liability insurance for a small wind turbine. Whether or not the applicant is participating in the net metering program, the applicant will be required to meet the insurance coverage requirements set forth in 20 VAC 5-315-60.

5.Evidence that the installation of the small wind turbine avoids the emission of radio and television signals and that the small wind turbine

complies with the provisions of Section 47 of the Federal Code of Regulations, Part 15 and subsequent revisions governing said emissions.

c. Procedure

1. An owner shall **submit an application** to the Zoning Administrator for a zoning permit for a small wind turbine.

2. The Zoning **Administrator shall issue a permit or deny the application within one month** of the date on which the complete application is received.

3. The Zoning Administrator shall issue a zoning permit for a small wind turbine if the application materials show that the proposed installation **meets the requirements** of this ordinance.

4. If the application is denied, then the Zoning Administrator shall notify the applicant in writing and provide a written statement of the reasons why the application was denied.

5. If the application is denied, the applicant may appeal this decision to the Board of Zoning Appeals.

6. Notwithstanding subsection 5.1, **no requirements** of subsection 5.1.46 (d) **may be waived** or modified for a small wind turbine.

d. Requirements. Each small wind turbine shall be subject to the following:

1. *Primary purpose.* The primary purpose of the small wind turbine **shall be to supplement other electricity sources as an accessory use to existing buildings or facilities**, wherein the electric power generated is used primarily for on-site consumption. Provided that nothing herein shall prohibit the owner from connecting the small wind turbine to a public utility and selling surplus power to the utility.

2. *Location.* Notwithstanding section 4.2.3.1 of this chapter, the small wind turbine may be located in an area on a lot other than a building site. A small wind turbine shall not be located within a historic district or within a ridge area.

3. *Visual Appearance.*

a. The small wind turbine towers shall maintain a galvanized steel finish, or if the owner is attempting to conform the tower to the surrounding environment and architecture, the tower **may be painted to reduce visual obtrusiveness subject to the approval of the Zoning Administrator.**

b. Small wind turbines, towers, and building mounted structures shall not be artificially lighted.

c. **No** small wind turbine, tower, or building-mounted structure should have any sign, writing, or picture that may be construed as **advertising.**

4. *Noise.* Small wind turbines shall **not exceed [55] decibels**, as measured at the closest property line. The level, however, may be exceeded during short-term events such as severe weather events.

5. *Lot Size.* A small wind turbine shall be located on a parcel that, at minimum, **is [one (1) acre] in size.**

6. *Setbacks.* The small wind turbine shall not be located closer in distance to any lot line than one hundred and fifty (150) feet. The agent may authorize a small wind turbine to be located closer to any lot line if the applicant obtains an easement or other recordable documents showing agreement between the lot owners that is acceptable to the county attorney and, where applicable, that prohibits development on the portion of the abutting parcel sharing the common lot line that is within the small wind turbine's fall zone. If the right-of-way for a public street is within the fall zone, the Virginia Department of Transportation shall be included in the staff review, in lieu of recording an easement or other document.

7. ***Height.***

a. The small wind turbine, if installed on a roof or as a building-integrated device, may project no more than **[15 feet]** above the highest point on the structure and shall comply with the height requirement of the zoning district.

b. The small wind turbine, if installed on a tower, shall comply with the height requirement of the zoning district or a **maximum height of 120 feet.**

8. *Collocation.* The small wind turbine shall not have personal wireless service facilities collocated upon it.

e. ***Expiration.*** A zoning permit issued pursuant to subsection C of this section shall expire if:

1. The small wind turbine is **not installed and functioning within 24 months** from the date the permit is issued; or,
2. The small wind turbine is **out of service or otherwise unused for a continuous 24 month period.**

f. *Decommissioning.* Any small wind turbine found to be unsafe **[by the building official]** shall be repaired by the owner to meet federal, state and local safety standards or removed within **[six months]**. Any small wind turbine that is not operated for a continuous period of **[24 months]** shall be considered abandoned, and the owner of the system shall remove the turbine within **[90 days]** of receipt of notice from the locality instructing the owner to remove the abandoned small wind turbine and tower. If the agent determines at any time that surety is required to guarantee that the small wind turbine will be removed as required, the agent may require that the owner submit a certified check, a bond with surety, or a letter of credit, in an amount sufficient for, and conditioned upon, the removal of the small wind turbine. The type and form of the surety guarantee shall be to the satisfaction of the agent and the county attorney.

figure 6

Chairwoman Mallek,

We are a group of University of Virginia undergraduate students currently working on a project as a part of a Global Sustainability course. The prompt for the project is that each group should collaborate with a community partner to improve local sustainability. Our class section's theme was wind energy and our group decided to focus specifically on making wind turbines more accessible to local residents. Through our research and consultation with the Virginia Center for Wind Energy we have determined that the best way to promote wind energy development in Albemarle County is by revising the ordinance that regulates turbine construction.

We have determined that while industrial wind energy is not ideal in Albemarle County, residential wind energy is a viable option. We believe that it would be beneficial to revise the existing wind ordinance regulating wind turbine installation. We drafted a new ordinance that has more specific regulations that we think will simplify the process of installing a residential wind turbine. We were hoping to present our revised ordinance to the Board and to have a conversation in general about the county's wind policy. We believe that even though industrial wind power will never be a primary source of power generation within Albemarle County (the wind resources simply are not strong enough to allow this), with a revised ordinance that promotes residential wind turbine installation, the county can still reduce its reliance on fossil fuels and begin to transition to a cleaner, more environmentally friendly energy portfolio.

The revised ordinance we have created is attached to this email and we would truly appreciate it if you and your colleagues took a close look at our revisions. Thank you for your time and for considering our request. Our contact information is listed below and we hope to hear back from you shortly.

Kelly Lahvic
Austin Dabney
Chris Haberland
Isabella Artiles
Samuel Reid
Trevor Gopnik