

SITING SOLAR: Guidelines, Good Practices and Permits

Finding a good solar site isn't always easy. There are many important things to consider — the most important being if the site faces south, providing adequate access to the sun.

But there are also other important considerations, such as avoiding or minimizing impacts to prime agricultural lands, wetlands, floodplains, prime recreational lands, ecologically and archeological sensitive areas, scenic viewsheds, etc.

A solid understanding of how to site your project in a location that meets permit parameters and embodies a “good neighbor policy” that balances different goals and interests can help to expedite projects (a.k.a. good sites = faster permitting = happier communities and developers).

The long and short of it is that most solar projects will require a permit or permits or, at a minimum, notification to the municipality in which a project is proposed. Necessary permits, certificates and notifications are the responsibility of the landowner (though if you partner with a developer, they almost always handle securing the necessary permits). The types of permits required for any renewable project will vary greatly depending on the project.

For all solar projects that will be interconnected to the electrical grid (net-metered), a Certificate of Public Good is required from the Public Service Board (PSB). The PSB, under the provisions of Section 248, issues Certificates of Public Good to applicants if they meet specified criteria, including need, reliability, economic benefit and site-specific environmental criteria incorporated from Act 250. However, net-metered projects are exempt from some Section 248 criteria in order to expedite the permitting process. These exemptions are outlined in *PSB rules*. For more details about Section 248, acquiring a Certificate of Public Good or navigating the process, see the PSB publication “*Citizens' Guide to the Vermont Public Service Board's Section 248 Process*.”

Other permits that might be required for a renewable energy project include:

- Construction General Permit — Obtained from the Vermont Agency of Natural Resources (a stormwater permit; required when disturbing over one acre of land).
- Air Pollution Control Permit — Obtained from the Department of Environmental Conservation, Air Quality Division.
- General Permit — Obtained from the Army Corps of Engineers (most often for projects with likely wetland impacts).

Because the types of permits required vary (depending on the generation type, the scale of the proposed project, the location of the proposed project, etc.), consulting with appropriate state officials should occur early in the project planning process. Again, often times, solar projects are developed in partnership with private energy developers, who manage many of these important details. More information about renewables, the regulatory process and qualified energy developers may be available from *Renewable Energy Vermont*, a trade organization for renewable energy businesses and contractors.

Here is more specific information on some of the big, potential issues you might need to consider — or avoid — to advance a good, carefully sited project:

- **Wetlands.** New solar projects should work to avoid impacts to wetland and wetland buffers. State wetland rules require developments to avoid impacts to class I and II wetlands. If impacts cannot be avoided, measures must be taken to minimize impacts. If a

project does impact a wetland or its associated 50' buffer a state wetlands permit is necessary. It is possible to site solar projects in wetland areas that have limited functions and values, provided the project does not have a significant effect on those functions and values; however, siting solar projects in wetland with high functions and values is likely not permissible.

In general, it is best to avoid developing projects in the following wetland conditions due to the high likelihood of impacts to wetland function and value:

- a) Forested Wetlands. Clearing of forested wetlands is not permitted.
 - b) Shrub Wetlands.
 - c) Wetlands associated with floodplains/floodways.
 - d) Wetlands with seasonally flooded hydrology or longer. This includes wetlands where surface water (i.e. ponding) is present for extended periods, especially early in the growing season, and when surface water is absent, the water table is often near the land surface.
 - e) Wetlands with the following hydric soils as described in the latest version of *Field Indicators of Hydric Soils in the United States*: Histosol, Histic Epipedon, Black Histic, Sandy Mucky Mineral, Loamy Mucky Mineral, or Loamy Gleyed Matrix.
 - f) Exemplary natural communities.
 - g) Areas of significant wildlife habitat.
 - h) Rare threatened or endangered species habitat.
- **River and Stream Buffers.** The ANR requires projects to maintain a 50' or 100' undisturbed, vegetated buffer between the project's limit of disturbance and the top of proximate river or stream banks. The size of the buffer is determined by the size and characteristics of the stream, which is explained in great detail in the ANR's *Riparian Buffer Guidance document*, as are instructions for how to properly establish and measure from top of bank. In general, the rule is that a project should be no closer than 50' from small streams and 100' from larger rivers.
 - **River Corridors.** An applicant considering a site near a river or stream and river corridor might run into obstacles. Contact The Agency of Natural Resources will not permit new development that encroaches on river corridors. ANR is currently mapping river corridors statewide, and those maps are either available on the *Natural Resource Atlas* or contact the ANR's River Management Division, who can provide a river corridors map specific to the site or more guidance. <http://www.watershedmanagement.vt.gov/rivers.htm>
 - **Inundation Flood Hazards.** New projects may be sited partially within the inundation floodplain or floodplain fringe provided certain design and management conditions can be met and the soil is suitable to support the infrastructure during an inundation event. Ideally transformers, converters and the main project infrastructure pad will be located outside of the inundation floodway or floodway fringe. Arrays may be located in these areas provided they meet the following "Best Management Practices" (BMP):

- Elevated such that the lowest floor is one foot above the base flood elevation;
- Designed and adequately anchored to prevent flotation, collapse or lateral movement of the structure during the occurrence of the base flood;
- Constructed with materials resistant to flood damage;
- Constructed by methods and practices that minimize flood damage; and
- Constructed with electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are design and/or located so as to prevent water from entering or accumulating within the design components during conditions of flooding.

For more details turn to ANR's *Technical Guidance for Determining Floodway Limits*: http://www.watershedmanagement.vt.gov/rivers/docs/rv_floodway_tech_guidance_10-09-09.pdf

- **Wildlife Habitat.** New solar projects should avoid impacts to significant wildlife habitat, such as deer wintering areas, or to areas that support rare, threatened or endangered species (RTE). ANR can provide advice as to whether a site has high potential for RTE species and, if so, a RTE plan survey will be required as part of the permit application. Note: These surveys must take place during the summer months, so please keep that in mind when planning your project.

For each of these issues, there are some very useful tools that can help you examine if natural resource issues — such as those above exist — and might shape how and if a project moves forward. They are:

ANR's Natural Resource Atlas. This is a terrific resource to identify wetlands and other potential key natural resource issues, including threatened and endangered species habitat. It includes the ability to overlay several maps. It also has a great measuring tool if you open the tool bar (<http://anrmaps.vermont.gov/websites/anra/>). Note: this requires downloading Silverlight onto your computer (free).

BioFinder. This is a map and database identifying Vermont's lands and waters supporting high priority ecosystems, natural communities, habitats and species. (<http://biofinder.vt.gov/>)

Beyond natural resource issues and potential constraints, there are a few other potential things to address or consider, including:

- **Agricultural lands and soils.** Vermont has limited agricultural land on which farming can be viable. To the best of your ability, it's important to avoid siting solar projects on the very best soil types, known as primary agricultural soils, a rating given by the National Soil Conservation Service (NRCS), and available on maps and in fact sheets (see below). If you plan to install a solar array on any kind of farm land, it is important to consider how your solar project can be designed to be compatible with farming rather than taking agricultural land out of production for the life of the solar project. Here are a few things to consider:

- Mount arrays other than with ballast or concrete, for example with driven piles or posts, or helical anchors.
- Design for compatibility with agricultural activities, such as such as grazing sheep or cattle beneath arrays.
- Reclaim forested or brushy land for eventual agricultural use by cutting out trees and shrubs, and placing the solar array on the cleared land. This can be especially useful when the soils are the most productive according to the NRCS maps, and the land has been allowed to grow up into brush.
- Locate arrays in buffer areas between agricultural fields and neighboring uses, or on the edges of fields.
- Install roads and electrical equipment at the edge of the solar project to minimize disturbance and lower the eventual decommissioning burden. Any excavated soil should be stockpiled on site for use when reclaiming the land after the project is complete.
- Assemble a decommissioning and reclamation plan and set aside funds that can be accessed even if there's a bankruptcy. The reclamation should include soil productivity testing to ensure health of soils after the infrastructure is removed, and will typically require you to remove roads and undo other soil disturbances such as trenching.

For a map of primary agricultural soils, including prime and statewide soils, visit: the ANR Natural Resources Atlas, <http://anrmaps.vermont.gov/websites/anra/>. To learn about soil remediation and how to make your project agriculture-compatible, contact the Vermont Agency of Agriculture, AGR.Helpdesk@State.VT.US, (802) 828-2430.

- **Land in Conservation Easements.** If your land has a conservation easement on it, reach out as early as possible to the easement holder to let them know you are exploring solar. Many easement holders, including the Vermont Land Trust, would welcome the opportunity to work with you or your community to explore where and how to site solar. Because easements are often created to protect open spaces, natural resource values and unique features on properties, working with your easement holder to learn about easement constraints and to avoid or minimize impact and issues is really important — and often makes projects possible. That said, there have been cases — and there might be instances — where specific easement and/or site limitations or natural resource impacts would make land held in a conservation easement impossible to develop. You can find [general guidance on this issue at the Vermont Housing and Conservation Board](#) or, better yet, contact your easement holder early to explore any issues and potential solutions.
- **Scenic byways.** These are highways designated for their scenic and have statutory limitations on signage, but not on buildings. Nevertheless, solar arrays that are hidden from view of a scenic byway may face less local pressure. A “good neighbor” policy is best. (<http://www.vermont-byways.us/>)
- **Historic preservation.** Check with the Division for Historic Preservation office early to understand if your site might have any issues or constraints in this arena and, if so, how you can best address or avoid them. For rooftop solar, the goal is to keep the historic nature of buildings intact and to minimize the visual impact of a project to the extent possible. For ground mounted solar, the Division may have to assess whether the land

has archeological value that might impact how and where you site your array. Consultation with the Division is part of the state-required Certificate of Public Good process. For more information, visit: (http://accd.vermont.gov/strong_communities/preservation/review_compliance) or call Historic Preservation Review Coordinator Jamie Duggan at 802-477-2288.

- **Town plans.** While renewable energy projects are exempt from local zoning, it's important to strive to site a project in a way that respects local residents and community goals. Again, however, to connect to the grid, all electric generation facilities are required to secure a Certificate of Public Good through the Vermont Public Service Board's Section 248 process and, within this process, the PSB must consider the municipal plan in granting Certificates of Public Good. Here is a link to more information about the CPG required and an application form.

<http://psb.vermont.gov/utilityindustries/electric/backgroundinfo/netmetering>. If you partner with a developer on a project, they nearly always manage the CPG process.

If you are advancing a project on your own, here is a guide to filing a petition under Section 248: http://vermontspeed.squarespace.com/storage/248_Guide_March_29.doc

Find your local plan by reaching out to your town office or through your Regional Planning Commission (www.vapda.org).

Check out VNRC and VLCT's *Energy Planning and Implementation Guidebook*, which provides an in-depth overview of how to help craft a strong energy element in your municipal plan.