



Solar Energy Facility Guidance

Environmental Services Section

(804) 367-4335

August 25, 2020

CONSERVE. CONNECT. PROTECT.

In accordance with DEQ's Permit By Rule (PBR) regulations and applicable guidance, applicants must address their project's beneficial and adverse impacts on natural resources (9VAC15-60-40 *et seq.*) and provide for agency review. Before submitting a Notice of Intent to apply for a PBR, we recommend that the proponent discuss the project scope and eligibility for a Solar PBR with DEQ Renewable Energy Program staff. For more information regarding this PBR, please see the following websites:

<https://www.deq.virginia.gov/Programs/RenewableEnergy.aspx>

<https://www.deq.virginia.gov/Programs/RenewableEnergy/SolarEnergy.aspx>

<https://law.lis.virginia.gov/admincode/title9/agency15/chapter60/>.

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Analysis of impacts on wildlife resources:

Environmental assessments completed before submission of the PBR application to DEQ are solely the responsibility of the applicant or consultant. We recommend that the applicant evaluate beneficial and adverse impacts on natural resources, summarize these anticipated impacts (*i.e.*, the “Summary Report” required under 9VAC15-60-40(D)), and describe how these impacts will be mitigated (avoided, minimized, or compensated for) in a project Operation and Mitigation Plan submitted as part of the Permit By Rule application.

The primary components of this Summary Report and Plan should include:

Initial Project Assessment (IPA): Applicants must address beneficial and adverse impact on natural resources (9VAC15-60-40 *et seq.*) and provide for agency review. For guidance pertaining to development of an Initial Project Assessment (IPA), please see our website: <https://dwr.virginia.gov/environmental-programs/fish-and-wildlife-information-section/>.

- **Cross-reference VAFWIS Bald Eagle nest presence/absence with CCB:** We recommend performing an updated search of bald eagle nests known from the area using the Center for Conservation Biology (CCB) website to evaluate whether active bald eagle nests are known from the project area: <https://ccbbirds.org/what-we-do/research/species-of-concern/virginia-eagles/nest-locator/>.
- **Impacts to bats and bat habitat:** If tree removal or forest management is anticipated, project design and construction should adhere to our standard protocols for bat habitat assessment and protection at:

<https://dwr.virginia.gov/wildlife/bats/little-brown-bat-tri-colored-bat-winter-habitat-roosts-application/>

and;

<https://dwr.virginia.gov/wildlife/bats/northern-long-eared-bat-application/>.

- **Incidental take and best management practices to protect bats:** In addition, the project should incorporate the recommendations in the Department’s *Guidance Document on Best Management Practices for Conservation of Little Brown Bats and Tri-Colored Bats*, at: https://dwr.virginia.gov/wp-content/uploads/LBBA_TCBA_Guidance.pdf.

If the project proponent elects not to adhere to these recommendations, they may opt to prepare a Conservation Plan to address incidental take of these state-endangered bats. For

additional guidance we recommend the proponent refer to our *Best Management Practices* referenced above, and contact DWR's Bat Biologist, Rick Reynolds, at (540) 248-9360.

- **Coastal Avian Protection Zones:** The applicant needs to identify whether the proposed site is located within a Coastal Avian Protection Zone (CAPZ; 9VAC15-60-60 *et seq.*). See DEQ's Coastal GEMS Online Application at:
<https://www.deq.virginia.gov/Programs/CoastalZoneManagement/CoastalGEMS-GeospatialData.aspx>.

Wildlife passage and fencing: Solar facilities typically incorporate perimeter fencing that may act as a barrier to ground-based wildlife movement. We recommend documenting wildlife travel corridors and observed passage prior to construction activities, and encourage the consultant/applicant to coordinate with DWR regarding wildlife fencing that would allow ingress and egress through the enclosure. Adaptive strategies may include lower fence height in wildlife corridors; dividing large sites into smaller fenced sub-parcels (approximately 40 acres maximum) to establish unfenced wildlife corridors; use of larger mesh fence at ground level (*i.e.*, "wildlife-permeable fencing"); and facilitating wildlife passage via ground-level openings or pipes (approximately 8-inch diameter) through the fence.

Fence design recommendations for deer management: Under certain conditions deer may seek refuge or become entrapped within fenced enclosures. To address this concern, perimeter fences around solar facilities should either be no more than 61" high OR greater than or equal to 96" (8') high. Fences lower than 61" should provide free ingress and egress of deer. Fences of heights between 61" and 8' are likely to entrap deer that are motivated to enter but not leave the enclosure. Fences over 8', if properly maintained, should exclude deer so that they do not become entrapped. Maintenance along the bottom of an exclusionary fence is critical to prevent deer incursions; fences should be erected tight to the ground and any gaps should be filled with rip rap or other barriers (except at purposeful wildlife crossings).

Notes regarding our fence design recommendations: Hunting deer is prohibited within any enclosure having fences higher than 61" (with certain exceptions not applicable to solar facilities). This prohibition is documented and explained in the Code of Virginia (29.1-525.1) and DWR regulations (4VAC15-90-291). Other than this prohibition, DWR does not regulate fencing of projects such as solar energy facilities.

These recommendations regarding design of fences around solar energy facilities are provided as a service to DEQ and to project applicants, to advise them of our recommendations to prevent incidental confinement of deer within their fenced enclosures, and to facilitate wildlife movement around and through such facilities. The Code and regulatory citations are provided as references, and to confirm that hunting within enclosures that do not comport with these recommendations (*i.e.*, greater than 61 inches in height) is prohibited.

To summarize, our recommendation is that the fences enclosing solar facilities should either be 61 inches or less in height, so that deer will have easy ingress and egress to/from the enclosure; or that the fences (including barbed wire if desired) be at least 96 inches in height, so that deer would not normally enter the site. These are DWR's recommendations to efficiently and safely manage deer at these facilities: DWR has no statutory or regulatory authority to enforce these recommendations. That said, we encourage all applicants to abide by these recommendations, and we encourage DEQ to include our recommendations as a condition of the PBR. Authority to do so, however, rests solely with DEQ or local authorities.

Native vegetation and pollinator species: We recommend that the applicant utilize native plants and seed mixes for all vegetative ground cover. We recommend the consultant or applicant contact DWR and DCR-DNH for guidance regarding native plantings and pollinator seed mixes.

Invasive species control: We recommend that invasive species control be incorporated into the facility operation and mitigation plan(s). Post-construction monitoring for invasive species is recommended as warranted by site-specific conditions.

DCR-DNH resources known from the region: The applicant should conduct a preconstruction desktop survey of natural heritage resources within the disturbance zone, and coordinate with VDCR-DNH regarding protection of these resources.

Additional Considerations:

Potential lake effect: It has been reported that contiguous aggregates of panels could result in an avian impact known as “lake effect,” in which birds may mistake the reflective solar panels for a waterbody and attempt to land on or near the panel array. Waterbirds are especially at risk because some species require a running start on the water surface and cannot take off from the ground. Further research and study of available scientific literature is recommended. Post-construction monitoring may be recommended, if warranted by site-specific conditions.

Potential thermal-island Effect: It has been reported that “thermal island” impacts may result from large solar facilities, similar to thermal islands resulting from large paved parking areas. To date, there has been little scientific investigation of this potential effect. Further research and study of available scientific literature is recommended. Post-construction monitoring may be recommended, if warranted by site-specific conditions.

Wetland or stream impacts: If the project entails instream work or wetland impacts, we anticipate that a Joint Permit Application (JPA) will be distributed for interagency review. We will review and provide additional comments as appropriate.

Coordination with USFWS: If a proposed facility may involve impacts to federally-listed Threatened or Endangered species; or to other federally protected wildlife resources, the applicant should contact Troy Andersen, USFWS – Virginia Field Office, at troy.andersen@fws.gov or (804) 693-6694 ext. 2428 for guidance regarding completion of an online IPaC (Information Planning and Consultation) project assessment.

For additional information: For additional information regarding DWR's role in reviewing solar energy development project applications, and their potential impacts to wildlife resources, please contact Ernie Aschenbach, DWR Environmental Services Biologist at telephone (804) 367-2733 or ernie.aschenbach@DWR.virginia.gov.