



To: Anne Arundel County's Dispersed Energy Committee (Agritourism Commission)  
From: Kathy Gramp on behalf of the Advocates for Herring Bay  
Date: April 2, 2018  
Re: Additional information on best practices for managing environmental impacts of solar arrays

At our February 22, 2018, meeting with the Committee, we discussed land use policies that would allow Anne Arundel to develop solar resources in a way that benefits our communities and environment.<sup>1</sup> To further support your efforts, we are enclosing examples of legislative language enacted by other Maryland counties regarding the environmental impacts of commercial solar arrays. We hope you will find this information helpful, and we would be happy to discuss it with you at your convenience.

Our examples are largely drawn from jurisdictions that recently updated their zoning codes for solar projects. The text focuses on four of the environmental issues that need to be addressed to effectively manage solar development on greenfields in RA districts:

1. ***Siting in sensitive areas*** – Talbot County and others have enacted directives aimed at steering solar development away from ecologically sensitive areas. Similar provisions are vital for Anne Arundel County, given our extensive networks of streams, wetlands, and forests.
2. ***Forest Protection*** – Unless Anne Arundel adds statutory protections for forests, developers could clear-cut large portions of a parcel for solar arrays, as is happening in other Maryland counties and in other states. Queen Anne's County and others ensure that the Forest Conservation Act applies to all commercial arrays, including those larger than 2 megawatts. In addition, Caroline County limits the portion of a parcel that can be cleared, and Queen Anne's precludes solar arrays on parcels within a designated greenbelt. Widespread clearing of forests should be prohibited, and where the limited removal of mature trees is unavoidable, there must be effective mitigation.
3. ***Vegetative buffers and ground cover*** – Queen Anne's County and others have enacted comprehensive landscaping conditions tailored to the specific characteristics of solar arrays. Among the key provisions in their codes are requirements to have an effective buffer within five years; address elevation conditions; plant a diverse array of native trees and a buffer benefiting pollinators; preserve topsoil; provide technical and financial assurances for maintaining the health of the vegetation over the life of the project; and have plans prepared by licensed landscape architects.
4. ***Decommissioning*** – Talbot and other counties have enacted provisions that ensure adequate funding for the cost of restoring the land at end of a project's useful life as a solar energy system. Adding such stipulations would strengthen the conditions in Anne Arundel's current zoning code.

Some of the specific terms and approaches in these examples may need to be adjusted to suit the conditions in our county. On balance, however, we believe that these examples provide a credible framework for drafting new conditions for the Anne Arundel code. Finally, as discussed at the February 22<sup>nd</sup> meeting, we also hope that the Committee will pursue policies that will maximize solar development on brownfields and existing impervious surfaces; make greenfield installations a special exception; reduce the lot coverage allowance; and mitigate other impacts, such as stormwater runoff, noise, lighting, fencing, etc.

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<sup>1</sup> See AHB's power point presentation, which can be found at <http://www.herringbay.org/index.html>

## Examples of best practices in Maryland counties as of March, 2018 for environmental conditions for principal solar systems on greenfields in RA districts

Excerpts from other jurisdictions are in black. Suggested changes for Anne Arundel County are in red italics.

### Siting in Sensitive Areas:

- **Talbot:**<sup>2</sup> “Projects that result in significant loss of prime agricultural land or undue impacts to forests, wetlands, habitat protection areas, and other natural resources or environmentally sensitive areas are strongly discouraged and shall be redesigned to avoid or minimize impact to the maximum extent practicable.”

### Forest Protection:

- **Queen Anne’s:**<sup>3</sup> “All forested areas impacted or proposed for removal shall be mitigated and protected in accordance with the Forest Conservation Act (*FCA*).” *The general exemption in the FCA under MD Nat Res Code § 5-1602 (b)(5) shall not apply to principal solar energy systems.*
- **Caroline**<sup>4</sup>: “The structures comprising the solar facility shall be constructed and located in a manner so as to minimize the necessity to remove existing trees upon the parcel and in no event shall the wooded acreage comprising more than 2% of the deeded acreage of the parcel or portion of the parcel devoted to the solar facility use be removed without demonstrating that such removal is necessary for the reasonable construction and performance of the use.”
- **Queen Anne’s**<sup>5</sup> [Solar arrays] Shall not be on a parcel within a greenbelt designation... as identified in the 2010 Queen Anne’s County *Comprehensive Plan* as amended....  
*Recommend Anne Arundel exclude solar arrays in high quality forest habitats. Such habitats could be defined as: those that have been designated as Forest Interior Dwelling (FIDS) bird habitat, Targeted Ecological Areas, Green Infrastructure Hubs and Corridors (“Greenprint”), contiguous forest of a certain size, and forest on steep slopes, stream buffers, and wetland buffers, etc.*

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<sup>2</sup> Talbot, 190.93.1.A.(2)(e)

<sup>3</sup> Queen Anne, 18:1-95-S-3 (b)

<sup>4</sup> Caroline, 175-85, B (2)

<sup>5</sup> Queen Anne’s, 18-1-38(B)(3)

## Vegetative Buffers and Ground Cover

Excerpts from other jurisdictions are in black. Suggested changes for Anne Arundel County are in red italics. Some of the key numerical metrics that may vary based on each county's conditions are underlined in blue italics.

Queen Anne: <sup>6</sup>*In addition to any applicable requirements in the Landscape Manual, a solar energy system-principal [on parcels other than brownfields?] shall meet the following:*

- (a) The vegetation shall screen the solar array ~~upon maturity~~ or within five years of the date on which the array becomes operable.
- (b) To the maximum extent practicable, the solar arrays shall be sited using natural topography and vegetation to buffer it from the view of adjacent properties and roads and/or rights-of-way.
- (c) The height of proposed plantings may require alternatives based upon the site elevation and visibility from adjacent properties and roads and/or rights-of-way. If necessary, an elevation or perspective illustration exhibit shall be provided with viewpoints from relevant locations around the site.
- (d) *The applicant shall* provide a detailed landscape plan, which may be a combination of plantings, existing vegetation, fencing, berms, and at a minimum shows the following:
  - a. A vegetated buffer that is a minimum of 50 feet wide around the perimeter of the site area of the ~~utility-scale~~ solar array. This buffer may be located within the required setback.
  - b. Any existing healthy vegetation within the required buffer area intended to satisfy the specific buffer standards.
  - c. Identification on the plan of the site's soil type and composition. Existing topsoil shall not be removed from the site.
  - d. The plan shall include a plant schedule as detailed below in (h).*
- (e) The plan shall be prepared by a licensed landscape architect registered in the State of Maryland.
- (f) In the event that healthy vegetation which is intended to meet the buffer planting requirements is cleared, damaged, or destroyed, the vegetation shall be replaced with the same species or with an approved substitute *that complies with these standards.*
- (g) Native plant<sup>7</sup> species are recommended. ~~Nonnative plant species shall not total more than 50% of all plantings.~~ *Planting of invasive species shall not be permitted. "Invasive" plants include but are not limited to all those identified by the Maryland Department of Agriculture as such.*<sup>8</sup>

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<sup>6</sup> Queen Anne, 18:1-95-S-3(c)

<sup>7</sup> *Guidance regarding the meaning of "native plants" can be found at <https://extension.umd.edu/hgic/earth-friendly/what-native-plant>*

<sup>8</sup> [http://mda.maryland.gov/plants-pests/Pages/maryland\\_invasive\\_plants\\_prevention\\_and\\_control.aspx](http://mda.maryland.gov/plants-pests/Pages/maryland_invasive_plants_prevention_and_control.aspx)

- (h) To ensure adequate variety, and avoid monotony and uniformity within the buffer, plant materials shall not include more than 25% of any single species. Plantings, detailed in a plant schedule on the plan, shall include a mix of evergreen and deciduous trees, understory trees, shrubs, and flowering herbaceous layer.
- (i) All plant material shall conform to the plant size specifications as established by the American Standard for Nursery Stock ANSI Z60.1-2014 and shall be planted to the following specifications:
- a. A minimum of two staggered rows of evergreen trees that at installation, shall be at least *six feet* in height, planted on centers of six to 12 feet depending on plant type. Evergreen tree species shall be a varied mixture of compatible types and achieve a height of *eight feet* in a minimum of *two years*. *At least 50 percent of the evergreen trees planted shall be native species.*
  - b. *Native* deciduous ~~shade~~ trees with a minimum size at installation of two-inch caliper shall be interspersed with the evergreens, planted on center no greater than 100 feet.
  - c. *Native* understory trees with a minimum size at installation of one-inch caliper or *six feet* in overall height each planted on center no greater than 100 feet.
  - d. *Native* shrubs, intermediate or tall, with a minimum size at installation of *24 inches in height or 30 inches* in spread.
  - e. The *buffer* shall include a *native* flowering herbaceous layer for *pollinators*. ~~or other beneficial habitat.~~ The layer mixture shall be planted a minimum of five feet wide and include a minimum of ~~10~~ *15* plant species with a minimum of ~~two~~ *three* flowering seasons. The herbaceous layer, if seeded, shall demonstrate 75% growth within a *three-year* surety period.
  - f. **DNR/PPRP**<sup>9</sup>: The grounds of the project, beneath and between the solar panels, shall be planted and established with native, warm season grasses and low-growing pollinator friendly plants.
  - g. **DNR/PPRP**<sup>10</sup> The schedule of mowing should avoid or minimize mowing activities during the nesting season of most ground-nesting birds (i.e., May through August.).
  - h. **DNR/PPRP**<sup>11</sup> *The use of pesticides is prohibited.*
- (j) Plants shall be watered in a manner adequate to ensure establishment and survival. The landscape plan shall include a watering schedule appropriate for the proposed plantings, which may include service by on-site irrigation or water truck, until the plant material is sufficiently established to survive on natural soil moisture.
- (k) A maintenance agreement shall be provided with a surety or other financial assurance ~~per~~ ~~Part 7, Article XXVII of Chapter 18~~ to cover replacement of the plantings and/or

<sup>9</sup> See DNR, Power Plant Research Program, Recommended License Conditions, PSC Case 9454, Brick Kiln Road Solar, 12/11/2017 and other citations

<sup>10</sup> See DNR, Power Plant Research Program, Recommended License Conditions, PSC Case 9454, Brick Kiln Road Solar, 12/11/2017 and other citations.

<sup>11</sup> See DNR, Draft Pollinator Scorecard.

irrigation system for any failed plantings and/or irrigation system. All plantings shall be maintained in a live, healthy condition for the duration of the solar array use and shall be replaced by the solar array operator or owner as necessary to maintain all required screening *and pollinator species*.

- (l) The surety, which may be provided on a phased basis per a landscape phasing plan, is based upon an estimate no more than a year old, shall be held by the County for a period of three years following planting, after which the County, upon satisfactory inspection of the landscape buffer, may release 50% of the surety. After an additional two years, to ensure proper survival and maintenance of the planted material, and upon satisfactory inspection, the County may release the remainder of the surety. The County reserves the right to inspect and require replacement of failed plant material for the duration of the solar array.

### **Decommissioning:**

*Excerpts from other jurisdictions are in black. Suggested changes for Anne Arundel County are in red italics; text from AA County's current code is in brown.*

- (1) A solar energy system is presumed to be abandoned if no electric or thermal power is generated by the system for a period of 12 consecutive months after which the owner of the system shall have 12 months to dismantle and remove the solar energy system. If the owner fails to dismantle or remove the system as required, the County may complete the removal at the owner's expense.
- (2) **Talbot**<sup>12</sup> A decommissioning plan shall be required. The plan shall include:
  - a. The expiration date of the contract, lease, easement, or other agreement for installation of the *solar energy system SES* and a timeframe for removal of the *solar energy system SES* within one year following termination of the use.
  - b. A requirement that the operator and property owner provide written notice to the County whenever a SES is out of active production for more than six months.
  - c. Removal of all above and underground equipment, structures, fencing and foundations. All components shall be completely removed from the subject parcel upon decommissioning.
  - d. Removal of substations, overhead poles, above ground electric lines located on-site or within a public right-of-way that are not usable by any other public or private utility.
  - e. Removal of lot coverage and access roads associated with the *solar energy system SES*. Re-grading and, if required, placement of like-kind topsoil after removal of all structures and equipment.
  - f. Re-vegetation of disturbed areas with native seed mixes and plant species suitable to the area or evidence of an approved nutrient management plan.
  - g. A recordable covenant executed by the property owner to reclaim the site in accordance with the decommissioning plan and associated approvals upon cessation of the use.

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<sup>12</sup> Talbot, 190.93.1.C.8

- h. A requirement for County inspection and approval of the decommissioning and reclamation of the *solar energy system SES* site.
- (3) **Talbot**<sup>13</sup> Financial assurance. The operator or property owner of *a solar energy system ~~medium or large scale SES~~* shall provide a bond, surety, letter of credit, lien instrument, or other financial assurance in a form and amount acceptable to the County to secure payment of 125% of the anticipated cost of removal of all equipment, structures, fencing, above or below ground level, and any accessory structures, and restoration of the site in accordance with the requirements of this section if use of the *solar energy system SES* is discontinued continuously for one year. The financial assurance shall be provided prior to issuance of a building permit and shall be renewed so as to remain in full force and effect while the *solar energy system SES* remains in place. The financial assurance shall require the obligor and the owner to provide at least 90 days' prior written notice to the County of its expiration or nonrenewal. The Planning Director may adjust the amount of the surety as reasonably necessary from time to time to insure the amount is adequate to cover the cost of decommissioning, removal and restoration of the site.
- (4) **Cambridge**:<sup>14 15</sup> The bond shall exclude all the salvage value of the improvements. The security is subject to the approval of the *County City*, and evaluation thereof shall include the credit worthiness and financial capabilities of the obligor(s).

### **Links to county codes:**

Queen Anne's <https://ecode360.com/7137102>

Talbot <https://ecode360.com/10158931>

Cambridge: search for city ordinance 1102

Caroline county: <https://ecode360.com/documents/CA1090/source/LF999738.pdf>

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<sup>13</sup> Talbot, 190.93.1.C.9

<sup>14</sup> Cambridge, 4.2.3.D.5.1.xiii.a

<sup>15</sup> Cambridge, 4.2.3.D.5.1.xiii.d