PHED & T&E Committees #1
July 9, 2020

M E M O R A N D U M

July 6, 2020

TO: Planning, Housing, and Economic Development Committee
Transportation and Environment Committee

FROM: Jeff Zyontz, Senior Legislative Analyst
Mira Singhal, Council Summer Fellow

SUBJECT: Zoning Text Amendment 20-01, Solar Collection System – AR Zone Standards

PURPOSE: Worksession

Potential Participants

Casey Anderson, Chair, Montgomery County Planning Board
Robert Kronenberg, Deputy Director, Planning Department
Richard Weaver, Area 3 Chief, Planning Department
Greg Russ, Planner Coordinator, Planning Department
Christopher McGovern, GIS Manager, Planning Department
Adriana Hochberg, Climate Change Coordinator, Office of the County Executive
Stan Edwards, Chief, Division of Environmental Policy and Compliance, DEP
Sarah Ramirez, GIS Specialist, DEP
Jeremy Criss, Director, Office of Agriculture
Mike Scheffel, Director of Planning and Promotions, Office of Agriculture

Worksession Schedule

The PHED Committee Chair intends to review major issues on July 9. Committee votes will be taken on July 16. On July 9, the Committee will have the opportunity to discuss the following questions raised in testimony:

- Is Zoning Text Amendment (ZTA) 20-01 premature?
- Is ZTA 20-01 urgently needed?
- Is ZTA 20-01 contrary to master plans?
- Can solar facilities be part of agriculture?

These questions are addressed in issues I to IV in this memorandum. On July 16, the Committee will have the opportunity to discuss amendments to ZTA 20-01 included in issue V.

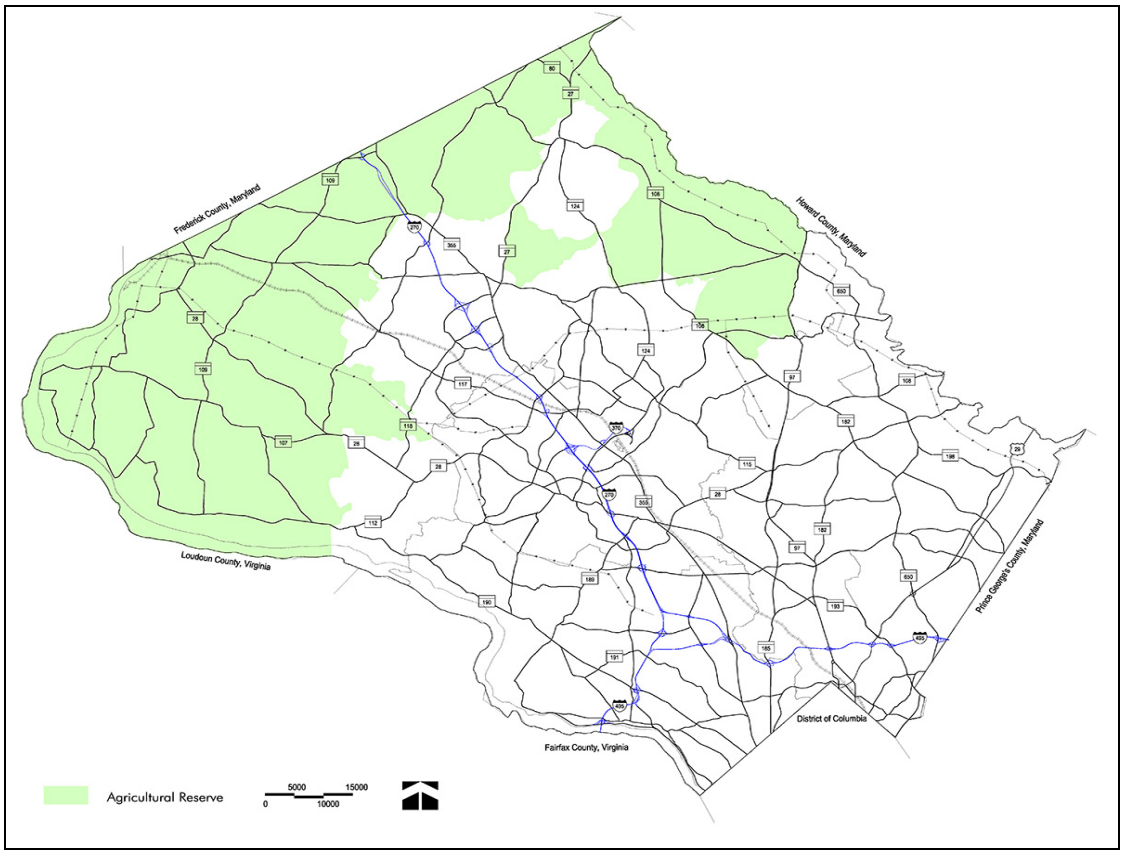
Background

ZTA 20-01, lead sponsors Councilmember Riemer and Council Vice President Hucker and co-sponsor Councilmember Rice, was introduced on January 21, 2020. ZTA 20-01 would revise the Solar Collection System use standards to allow larger facilities in the Agricultural Reserve (AR) zone. The total amount of collection systems on all parcels would be limited to 1,800 acres. Appropriate vegetation is permitted and encouraged under and around the solar panels, with a focus on adhering to the Maryland Pollinator-Friendly Designation Certificate criteria or to be used to include grazing of livestock, apiculture, and similar uses.

Solar panels are currently allowed in the AR zone as an accessory use. The Zoning Ordinance defines accessory use as a facility producing no more than 120% of on-site electrical needs. ZTA 20-01 would expand the opportunities for solar power. It would allow solar facilities as a principal use with a Planning Board-approved site plan.

Facilities in the AR zone that exceed accessory use standards must obtain site plan approval. The site plan approval for solar facilities in the AR zone would allow for the designation of Maryland's Pollinator-Friendly Designation Certificate criteria or to be used to include grazing of livestock, apiculture, and similar uses to continue the maintenance and care of the land. Whether the facilities would be used in conjunction with crop production, grazing herds, regenerative farming or a similar use, site plan approval would require grading and soil removal to be minimized.

An uncodified provision of the ZTA would require the Department of Permitting Services to annually report on the number of total acres used for Solar Collection Systems. The purpose of this reporting would be to alert the Council on the difference between the acreage used for solar in the AR and the 1,800-acre limit.



ZTA 20-01 applies to solar facilities that produce less than 2 megawatts.[1] It responds to solar facilities allowable under the Maryland net metering program. As of 2016, net metering is available statewide until the aggregate capacity of net-metered systems reaches 1,500 MW (megawatts), which is roughly about equal to 10% of Maryland's peak demand for electricity in 2014.

Public Hearing

The Council conducted a public hearing on March 3, 2020.[2] The testimony did not reflect any grand consensus. One constituency said it was premature to allow industrial uses in the AR zone, at least until other options have been researched.[3] Other testimony supported an immediate reduction in carbon emission to minimize climate change. A number of amendments to ZTA 20-01 were recommended.

[1] The Maryland Court of Appeals ruled that, under State law, the County's zoning and subdivision regulations are preempted by the Maryland Public Service Commission (PSC) for large solar facilities. The Court's decision in Board of County Commissioners of Washington County v. Perennial Solar means that the PSC has the final say on the location of solar projects that require a Certificate of Public Convenience and Necessity from the PSC. This certificate requirement applies to projects of at least 2 megawatts (roughly 10 acres) in size. In the absence of a change in State law, the County is powerless to regulate large solar facilities. The PSC must consider local zoning but, as in the situation that provoked the Court's decision, the PSC may overrule zoning.

[2] The Committee met face-to-face in an open meeting. It seems like a lifetime ago.

[3] Soil Conservation Service, Agricultural Preservation Advisory Board, Agricultural Advisory Committee, Montgomery Countryside Alliance, Montgomery Agricultural Producers, Sugarloaf Citizens Association, Montgomery County Farm Bureau, Conservation Montgomery, Bethesda-Chevy Chase Chapter Izaak Walton League, Montgomery County Chapter – Climate Mobilization, Rustic Road Advisory Committee.

Executive

The Executive finds ZTA 20-01 to be premature. In the Executive's opinion, the Council should have the benefit of the Climate Action Committee's final work product. Of the 94,000 acres in Agricultural Reserve zoned land, the Executive's solar mapping team found only 900 acres of AR zoned land available for solar use if prime soils, 150 stream buffers, tree cover, land, agricultural easements, and land remote from electric substations were taken into account. ZTA 20-01 as introduced lacks consideration of all those factors. The 1,800 acres allowed by ZTA 20-01 is in excess of the land most appropriate for solar facilities. More urban sites in the County offer 30,885 acres (maximum) of potential solar site areas. In the near future, the urban area may support more of the County's energy needs because of changes in solar technology (solar sidewalks, roads, window skin, and fabric).

Planning Board and Staff

Planning Staff noted that there are 8 classification of soils.[4] Clearly, the top classification is the best for agriculture (soils with only slight limitations that restrict their use.) Other classifications have limitations on agriculture, but the Executive used some of those other classifications in their exclusion of land available for solar use. If only the highest category of prime soil is barred from solar use, much more land is available.

The Planning Board would recommend the following (differences from the Planning Staff recommendations are noted):

- *Discourage (Planning staff would prohibit) solar on prime agricultural soils*
- *Prohibit solar on 15% slopes (Planning staff would say 8%) or on highly-erodible soils*
- *Add crop production to the list of plants that can be grown under solar facilities*
- *Prohibit solar on soils that are seasonally flooded*
- *Delete fencing requirement*
- *Protect scenic views (Planning staff would prohibit disturbance) through site plan review*

Summarized Public Testimony

ZTA 20-01 is premature (at best): Allowing solar facilities in the AR zone may or may not be an issue after the Climate Action Plan, or the General Plan Update. Any changes to the AR zone should be consistent with current approved plans and come after changes to those plans now in process. There should be more effort to: use solar opportunities outside the agricultural reserve; reduce energy consumption; and

[4] Natural Resources Conservation Service - Soils Classification
Class I (1) soils have slight limitations that restrict their use.
Class II (2) soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
Class III (3) soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
Class IV (4) soils have very severe limitations that restrict the choice of plants or require very careful management, or both.
Class V (5) soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
Class VI (6) soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
Class VII (7) soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
Class VIII (8) soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for aesthetic purposes.

use non-fossil fuel energy production, no matter where it is produced. The opportunity for solar development would decrease the land available for farming, make the County more food insecure, fail to protect prime soils, and increase the rental price of farmland as landowners seek the highest value use of their land. In the opinion of some, the initial 1,800-acre limit opens the door to a future increase of the maximum acres allowed. The ZTA does not sufficiently support regenerative farming or focus on soil biology to enhance soils and support greater carbon sequestration. The ZTA does not address local electric needs as required by the community solar program. There is no more land being made; industrial uses unrelated to farming should be prohibited in the AR zone.

The Council should postpone any consideration of controversial items, at least until it can conduct business face-to-face with interested parties.

ZTA 20-01 is urgently needed: Climate change is real and there is evidence that it is here. The demand for electric power is increasing (think electric cars) and inaction is costly to avoiding climate effects. The Climate Action Plan will not be completed for a year or more. ZTA 20-01 is a necessary choice to avoid inaction. Not all of the agricultural crops currently being grown in the AR zone are beneficial in terms of carbon sequestration. Farms are growing plants like soybeans and grass turf. Soybeans produce carbon dioxide and turf fails to fix carbon in the soil. No other land use reduces carbon more than replacing fossil fuel energy production with solar. More carbon will be saved by switching to solar than planting trees on the same land.

Rooftop solar can meet less than half of the County's needs. Not all residents have access to rooftops. Solar on rooftop is good but not as economical as large-scale facilities. The roof will last 20 years, but the investment in solar has a longer life.

The solar facilities give the landowners a steady rent that can help overcome farming's income volatility.

Other Recommendations for amendments

In addition to the amendments to ZTA 20-01 recommended by the Planning Board, there were several other amendments recommended in testimony. Some of those amendments would expand the opportunities for solar facilities. Some would limit the opportunities for those facilities. A third category of recommendations would add or remove conditions for those facilities.

1. Reduce opportunities for solar facilities:
   - Prohibit on prime agricultural soils
   - Prohibit on environmentally-sensitive areas
   - Require additional consideration of scenic views and rustic roads
   - Require facilities be part of Maryland's Community Solar program
   - Delete the changes proposed for facilities larger than 2 MW

2. Expand opportunities for solar facilities:
   - Double the allowable acreage
   - Increase accessory solar facilities to allow 200% of on-site use

3. Additional conditions:
   - Give preference to land being farmed by the owner
   - Better define pollinator-friendly
   - Expand the plants allowed under a solar facility
   - Allow Planning Board waiver of screening requirements

Issues

I. Should the consideration of ZTA 20-01 be postponed?

Testimony suggested that ZTA 20-01 be postponed to wait for the:

1) Council to resume face-to-face meetings;
2) Climate Action Report;
3) General Plan Update (Thrive Montgomery 2050); and
4) feasibility of alternatives outside of the Agricultural Reserve.

Face-to-Face Public Participation

There is a state of emergency in Maryland. The Council Office Building is not open to the public. Council and Council Committee meetings are held through the internet. Some people recommended that the Council postpone consideration of controversial matters until the public is afforded the ability to fully participate in the legislative process face-to-face.

With regard to ZTA 20-01, the Council conducted a face-to-face public hearing on March 3. In addition to the public hearing, public participation includes Councilmember's individual conversations with interested parties and observing the Committee and Council in public sessions. Public sessions are online, shown on cable television and, if wireless or cable connections are not available, can be heard by dialing a telephone number. Residents have been free to submit any additional comments to the public record. All of those aspects of public participation are available without physical proximity.

A lead sponsor of the ZTA wants to proceed with discussing the substance of ZTA 20-01. A recommendation to postpone the consideration of ZTA 20-01 is an issue for this meeting. The joint Committee's recommendation will go to Council.

Climate Action Report

In July 2019, Montgomery County launched a planning process to develop prioritized actions and strategies to meet the County's greenhouse gas emissions reduction goals. The County intends to finalize a Climate Action and Resilience Plan by early 2021 that will provide a roadmap to achieve zero emissions and provide recommendations for adapting to a changing climate.

The Executive convened 5 technical workgroups to help in the climate-planning effort. The workgroups reviewed past climate reports and plans developed by the County and best practices from other jurisdictions. The workgroups recommended 850 strategies that have high potential to meet the County's

goals in an equitable manner. The strategies most relevant to ZTA 20-01 drafted by the Clean Energy Workgroup supported some use of the Agricultural Reserve for solar facilities.[5]

General Plan Update (Thrive Montgomery 2050)

Planning Staff described its work program, Thrive Montgomery 2050, which will not include detailed land use, zoning and other action items.[6] The Plan will only "guide future planning efforts." Waiting for the guidance of the Plan will only mean waiting for the approval of future plans.

Feasibility of alternatives outside the Agricultural Reserve

Zoning has its origins in nuisance prevention. Laundries, liveries, and blacksmiths were prohibited in some areas of some towns even before zoning. Zoning is a negative exercise of police power. It prohibits some land uses and allows others. It does not mandate action on the part of a landowner, apart from actions triggered by new construction or changes in land uses.[7] Other laws may require immediate action (those that impact immediate public safety), but not zoning.

The Executive found that urban sites (areas outside of the AR zone) in the County offer 30,885 acres (maximum) of potential solar areas for solar facilities:

- 12,100 acres of open land;
- 6,580 acres of parking lots and garages;
- 1,644 acres of commercial building roofs (excluding government roofs);
- 9,146 acres of residential building roofs;
- 1,415 acres under transmission lines.

Zoning currently allows solar facilities on these areas. By the approval of ZTA 18-01 (effective June 4, 2018) the Council expanded the ability to construct larger solar facilities in Rural Residential, Residential, Commercial/Residential, Employment, and Industrial zones. The Executive reports the

[5] The Clean Energy Working Group report to date included the following strategy and actions:
Strategy 2.2 – Assess feasible public and private locations for solar and wind installations of various scales in Montgomery County and adjacent jurisdictions….
Strategy 2.5 – Support expansion of community solar.
Action 2.5.1 – Evaluate environmental and ecological impact of using land in the agricultural reserve for solar.
Action 2.5.2 – Establish demonstration projects to co-locate PV solar with agricultural production (such as grazing) and pollinator meadows. (This action item was repeated as Strategy 2.9): https://www.montgomerycountymd.gov/green/climate/climate-action-planning.html

[6] Thrive Montgomery 2050 will produce a comprehensive update of Montgomery County's General Plan, which will guide the County's growth and shape of its physical environment for the next 30 years. It will consider a variety of trends and issues that will impact the County's future and develop a broad set of policies addressing multiple topic areas to help the County be proactive in creating a successful future, even in the face of unanticipated challenges. Thrive Montgomery 2050 will look at the development that has taken place over the past 50 years and assess how our planning framework has evolved to respond to those challenges. It will explore possible alternatives to position the County to be able to adapt to changing economic, social, environmental and technological conditions, and be able to harness these changes to help the County and its residents to thrive. Rather than detailed, specific land use, zoning or other action items, the updated General Plan will guide future planning efforts through subsequent local area and Countywide functional master plans, facility planning and other public and public/private partnership initiatives. These more targeted planning initiatives will provide immediate, in-depth analysis and testing of ideas and recommendations for specific issues. https://montgomeryplanning.org/wp-content/uploads/2019/05/General-Plan-Update-Scope-of-Work-staff-report-for-5-30-19-FINAL.pdf.

[7] The Executive has not proposed requiring new buildings or parking facilities to have solar panels and has not required new roofs to be wired for future solar installations on rooftops.

issuance of 16 County solar projects, 66 commercial solar permits, and 9,295 residential permits. The total amount of energy produced by these installations is approximately 110 MW.[8] Each megawatt requires 5 to 8 acres of solar panel area. On the low end, owners of 550 acres of non-AR zoned land have taken advantage of the current allowance to use solar panels.

Even if solar facilities were constructed on a significant percentage of these non-AR zoned land, it would not be sufficient to meet the County's energy needs. According to Executive staff, the minimum need is for 23,000 acres of solar panels. It would be unrealistic to believe that 75% of all urbanized opportunities would build solar panels. The upper range of the calculated minimum need is more than twice the acreage available in the urbanized portion of the County.

II. What is the urgency of ZTA 20-01?

Global warming is proceeding. Changes of approximately 1 degree Celsius have triggered cataclysmic changes to the Earth. Testimony related to climate change made it clear that the environmental situation is time-sensitive. Climate change effects include an accelerating collapse of the West Antarctic Ice Sheet, the thawing of the Arctic permafrost, an increase in mega-droughts, heat waves, super-storms, flash flooding, the migration of mosquito-borne diseases, the melting of glaciers, polar ice-sheet collapse, coral bleaching, the mass extinction of species, ocean oxygen loss, and sea level rise.

On December 5, 2017, the Montgomery County Council adopted an Emergency Climate Mobilization resolution that declared a climate emergency.[9] Montgomery County has been a national leader in responding to the challenge of climate change, including establishing a goal of reducing greenhouse gas emissions in the County by 80% by 2050 as compared to 2005 levels. Given the pace of change, the County now needs to do much more, much faster. The longer Montgomery County waits for new information before making the switch to solar, the more the County will contribute to detrimental environmental impacts.

At present, rooftop solar and other urban sites in Montgomery County are not close to fulfilling the needs of current electric consumption. ZTA 20-01 would allow farmers who are able to make the switch to solar on their land in the AR zone to do so now. The AR zone, which makes up roughly 1/3 of Montgomery County, can be used to support the County's increasing electricity consumption while also benefiting landowner-farmers.[10]

III. Is ZTA 20-01 contrary to adopted master plans?

Master plans are guides for actions; they are not self-implementing. Zoning is law. Interpreting conformance to master plans, at times, is sometimes like being a Talmudic scholar. Experts can disagree by emphasizing one phrase over another…and every answer leads to more questions. The Council generally relies on the Planning Board to make findings of master plan conformance. With respect to ZTA 20-01, the Planning Board recommended approval with amendments. It did not raise any concerns about the ZTA being contrary to any master plan. The master plans and general plans do not recommend limiting all activities in the wedge to just planting and raising livestock.

---

[8] July 5, 2019: https://www.paradisesolarenergy.com/blog/top-10-counties-in-maryland-for-solar.

[9] Resolution No.: 18-974, https://www.montgomerycountymd.gov/COUNCIL/Resources/Files/res/2017/20171205_18-974.pdf.

[10] Several farms in Maryland are already incorporating solar energy into their land as an accessory use. A list of these farms can be found in the Appendix.

The 1964 General Plan had 4 general purposes for the wedge area of the County, one of which was to "provide a rural environment in which farming, mineral extraction, and other natural resource activities can be carried out".[11]

The 1969 General Plan Update encouraged "compatible, low-intensity non-agricultural uses" and recommended promoting "the development of profitable agricultural endeavors."[12]

The 1980 Functional Master Plan for the Preservation of Agriculture and Rural Open Space in Montgomery County says the following that may ultimately be applicable to ZTA 20-01:

> *It is vital to the economic well-being of the agricultural community to develop appropriate programs and land-uses that encourage the continuance of farming. Such uses must be permitted and encouraged in agricultural areas, since they are compatible with and essential to it.*[13]

The 1993 General Plan Refinement recommended limiting public and private non-agricultural uses. [14] It does not recommend prohibiting such uses. "Necessary non-agricultural uses…will continue to be located in the Agricultural Wedge when deemed appropriate."

---

[11] General Plan 1964

The General Plan's rural pattern recommendations have four broad purposes:

To help make the urban pattern efficient and pleasant;

To provide and protect large open spaces for recreational opportunities;

To provide a rural environment in which farming, mineral extraction, and other natural resource activities can be carried out; and

To conserve natural resources and protect the public water supply and recreational waters.

https://montgomeryplanning.org/wp-content/uploads/2017/10/GeneralPlanWedgesandCorridors1964colorocr.pdf (page 43.)

[12] General Plan Update 1969

Objective M. Avoid the intrusion of a mixture of conflicting land uses into agricultural areas, while permitting a wide selection of compatible activities.

Guidelines

1. Preserve where possible the use of the best soils for agricultural purposes.
2. Limit assistance to agricultural uses to areas outside areas of urbanization as indicated on the general plan and to areas having good agricultural lands.
3. Maintain a rural atmosphere in open space areas by limiting development to very low intensity.
4. Encourage compatible, low-intensity non-agricultural uses.

Objective N. Ensure that agriculture in the region becomes or continues as a viable land use.

Guidelines

1. Protect agricultural lands to preserve their value as farmland as long as the pressures of urbanization permit.
2. Promote the development of profitable agricultural endeavors.

https://montgomeryplanning.org/wp-content/uploads/2017/10/1969UpdatedGeneralPlanocr.pdf (page 17).

[13] Functional Master Plan for the Preservation of Agriculture and Rural Open Space in Montgomery County 1980

"The critical land use issue in this Plan is the loss of productive farmland; the focus is the identification and application of land use regulations and incentives to help retain agricultural land in farming and complementary rural open space areas."

"Agriculture is the preferred use in the Rural Density Transfer Zone. All agricultural operations shall be permitted at any time, including the operation of farm machinery and no agricultural use shall be subject to restriction because it interferes with other uses permitted in the Zone."

"It is vital to the economic well-being of the agricultural community to develop appropriate programs and land-uses that encourage the continuance of farming. Such uses must be permitted and encouraged in agricultural areas, since they are compatible with and essential to it." https://montgomeryplanning.org/wp-content/uploads/2016/09/PreservationAgricultureRuralOpenSpaceFunctionalMasterPlan1980ocr300.pdf.

[14] General Plan Refinement 1993

The Agricultural Wedge Tomorrow

The future of the Agricultural Wedge contains both new and continuing challenges. Some of the most important of these include:

IV. Can solar panels be integrated into agriculture?

The incorporation of solar energy into the AR zone does not take away from its original use of agriculture but rather provides additional benefits to farmers and residents of Montgomery County.

Based on research done in Arizona, Minnesota, Maryland, and Massachusetts, solar panels are able to be integrated into agriculture and can create additional benefits to the land when done properly. Listed in the Appendix are examples of agrivoltaic projects related to crop production, grazing herds, regenerative farming, apiaries, and wineries, along with a list of pollinator-friendly species (Table 1), and a draft version of the Maryland Pollinator-Friendly Certification Application. Farms around the United States, as well as several countries in Europe, are integrating solar power into agriculture.

The longer Montgomery County waits for new information before making the switch to solar, the more detrimental the environmental impacts will be for the County. Moving forward, ZTA 20-01 can allow farmers to utilize their land for both agriculture and solar power, creating a mutually beneficial partnership between the soil and the sun, crops and panels.

Concerns regarding degradation of topsoil were mentioned during the public hearing and can be addressed in ZTA 20-01. In Massachusetts, a farmer was also concerned about keeping the land alive with limited disruption of the soil. Researchers were able to create a solar installation "spaced far enough apart to allow sunlight to pass through to the field below and can be shifted horizontally to adjust the gap. The panels are supported by vertical poles embedded 10 feet into the ground. **Concrete could be prohibited, so the damage to the soil is limited and can be completely reversible**."[15]

As with all emerging technology, modifications can be made as the technology develops. With solar energy, "land can be reverted back to agricultural uses at the end of the operational life for solar installations. A life of a solar installation is roughly 20-25 years and can provide a recovery period, increasing the value of that land for agriculture in the future. Giving soil rest can also maintain soil quality and contribute to the biodiversity of agricultural land."[16]

V. Possible amendments

A. Restrict facilities to qualified community solar facilities

The Maryland Residential Community Solar program allows Maryland residents to purchase subscriptions for energy from community solar arrays, gaining the same economic advantages as having solar modules directly on their residences. In support of this program, the Maryland Energy Administration developed the Residential Community Solar Grant program. The program provides a monetary incentive for Maryland residents who wish to purchase (own) the energy benefits of the array. Low-to-moderate income

---

- maintaining agriculture as the preferred land use;
- limiting public and private non-agricultural uses;
- enhancing park and recreation linkages;
- directing development away from the Wedge; and
- protecting environmentally sensitive areas….

Agriculture will continue as the primary land use in the Agricultural Wedge. Non-agricultural uses muse be limited. Necessary non-agricultural uses, however, will continue to be located in the Agricultural Wedge when deemed appropriate. https://montgomeryplanning.org/wp-content/uploads/2017/10/GeneralPlanRefinement1993ocr.pdf (pages 32-33).

[15] https://civileats.com/2019/01/22/agrivoltaics-solar-panels-on-farms-could-be-a-win-win/.

[16] https://www.energy.gov/eere/solar/farmers-guide-going-solar.

(LMI) residents who subscribe to a community solar array under an ownership model are incentivized at a higher rate than other subscribers. Subscriptions must be to a community solar array within the subscriber's electric utility service area.[17]

The Community Solar program directs locally-produced power to local residents. Local users are matched to the power company receiving the power. The County is served by 2 power companies: Potomac Electric Power Company (PEPCO) and Potomac Edison. Most of the AR zone is served by Potomac Edison. The urbanized area of the County is served by PEPCO.

There is another program that can take advantage of net metering; the Aggregate Net Energy Metering (ANEM) program is also part of the program. This program allows the interconnection of a solar facility on a piece of property to specific customers. The only entities that qualify for ANEM are:

- Non-profit;
- Agriculture; or
- Local or State Government.

Both the Community Solar program and Aggregate program benefit the customers of the local electric power companies. Testimony suggested otherwise. Limiting AR solar to Community Solar would limit the applicability of ZTA 20-01 by prohibiting solar facilities that qualify for the ANEM program. To clarify the Lead sponsor's intent (to allow all net metering programs), Staff would recommend that the following amendment be added to line 53[18]:

iii. The system may produce a maximum of 2 megawatts (AC) and must be a Solar Collection System regulated under:
   A. Section 7-306.2 of the Maryland Public Utilities Article; or
   B. Maryland COMAR Section 20.50.10.

B. Fences (do not require)

A 6-foot fence around solar facilities is currently a requirement for limited use approval in non-AR zones and is a proposed requirement in ZTA 20-01. The Planning Board recommended deleting the fence requirement. Industry representatives reported in testimony that a fence is required by insurance companies.

Staff recommends retaining the fence requirement.

C. Allow screening waivers by the Planning Board in the course of site plan approval

The current code requires site plan approval for solar installations, except when the use is an accessory use. ZTA 20-01 extends that requirement to the AR zone. When visible from a residential use or a road, screening that satisfies Section 59.6.5.3.C.8 (Option A) is required. Option A requires a 30-foot planting area and a 6-foot fence. The Rustic Roads Advisory Committee requested the option for a screening waiver by the Planning Board. The Planning Board also made that recommendation. The fence requirement was previously discussed.

[17] https://energy.maryland.gov/residential/Pages/Community-Solar.aspx.
[18] https://codes.findlaw.com/md/public-utilities/md-code-public-util-sect-7-306-2.html; http://mdrules.elaws.us/comar/20.50.10.

If retaining natural vegetation cannot be a substitute for the planting required under "Option A", Staff would recommend allowing a waiver of the planting requirement, but the Planning Board should not be given the authority to prohibit a fence.

D. Planting under solar panels

As drafted, ZTA 20-01 would allow plants and crops conducive to agrivoltaic systems, pollinator-friendly plants, or plants suitable for grazing. Some testimony noted that Maryland's pollinator-friendly certification is still in a draft stage. The Pollinator-Friendly Designation Program bill (SB 1158) was signed by Governor Hogan in May 2017.[19] SB 1158 established a pollinator-friendly designation program for commercial ground-mounted solar facilities. That program is now in effect and a State employee with the Department of Natural Resources is working closely with individuals interested in pursuing the pollinator-friendly designation.

Other testimony communicated that, whatever the State's program requires, the County should require that at least 75% of the plants be native to Maryland.[20] Some speakers wanted more latitude in using other plants that increase agricultural output. Based on research in multiple states, both crops and pollinator-friendly plants are able to co-exist with solar facilities. Crops that have successfully been grown directly under solar panels include, but are not limited to, tomatoes, peppers, beans, carrots, chard, kale, and herbs. Appendix II includes a list of agrivoltaic applications in Maryland.

Staff recommends expanding the list of allowable plantings to include any other agrivoltaic plant material. The area of planting under solar panels should be maximized (concrete minimized). In the event solar is not being productively used, the Council could consider a bonding requirement in the building permit process to assure that funds are available to return the site to a state suitable for traditional agricultural use.

E. Avoid scenic easements – in general or near rustic roads

Most of the roads in the northwestern portion of the County are rustic roads. The area visible from all roads in the AR zone is not mapped. There is no evaluation of the quality of views from a road. Electric feeder lines tend to be along roads. A pre-existing feeder line with the capacity to carry more current is an attribute that makes solar facilities more economically feasible.

The Rustic Roads Advisory Committee requested consideration of all land within 0.25 miles of a rustic road as possibly scenic. Their recommendation is to require comments from the Committee before the Planning Board may approve a site plan.

One of the findings the Planning Board must make before approving a site plan is compatibility with "existing and approved or pending adjacent development." Staff would rely on this requirement for compatibility and not add another step in the approval process.

[19] http://mgaleg.maryland.gov/2017RS/chapters_noln/Ch_372_sb1158E.pdf.
[20] A list of native trees, shrubs, and flowers, as well as non-native plants, can be found in Table 1 of Appendix II.

F. Limit to farmer owned land - give owner-farmer preference or do not allow on rented land

One of the criticisms of ZTA 20-01 is the possibility it will increase the price of renting farmland. This fear exists even though the ZTA would only allow solar facilities on a small percentage of AR-zoned land. There is no doubt that solar facilities can and do pay more to the landowner than farmers can afford to pay to grow crops. To the landowner, renting to a solar power company is a better economic option than renting to a farmer. To the extent that the landowner is the farmer, solar provides a form of subsidy to aid in the continuation of farming.

In addition to limiting the total amount of land that can be used for community-sized solar facilities, ZTA 20-01 limits the size of any individual facility by restricting the facility's ability to generate power to under 2 MW. It has been estimated that the maximum size facility would be about 10 acres. Whether there would be any appreciable effect on the price charged for renting farmland is open to question but if there was a farmer renting that land, there is no doubt that the site's renting farmer would have less land for traditional farming once the solar facility is established.

The opportunity to construct a solar facility cannot be limited to landowners who farm. Zoning controls use, not ownership. A way to ensure solar facilities do not foreclose the opportunity to farm would be to limit the percentage of any parcel that can be used for solar. The zoning code can limit a use to a percentage of an owner's land. If a maximum of a parcel (or abutting parcel under a single ownership) is 20%, then only a parcel 50 acres or greater could have the maximum size solar facility.

G. Facilities larger than 2 MW

The Maryland Court of Appeals ruled that, under State law, the County's zoning and subdivision regulations are preempted by the Maryland Public Service Commission (PSC) for large solar facilities. The Court's decision in *Board of County Commissioners of Washington County v. Perennial Solar* means that the PSC has the final say on the location of solar projects that require a Certificate of Public Convenience and Necessity from the PSC. This certificate requirement applies to projects of at least 2 MW (roughly 10 acres) in size. In the absence of a change in State law, the County is powerless to regulate large solar facilities. The PSC must consider local zoning but, as in the situation that provoked the Court's decision, the PSC may overrule zoning.

Currently, the zoning code indicates that larger facilities are to be approved under the same standards as a public utility. Testimony suggested retaining this requirement as guidance to the PSC on what it must consider. ZTA 20-01, as introduced, would amend this provision (lines 74 to 77) to acknowledge that these larger facilities are exempt from zoning. This was done to put readers on notice of the State law.

From the standpoint of giving the PSC notice of what standards would apply, retaining the current code makes some sense.

H. Determine where solar facilities should be prohibited

There are special agriculture land and environmentally-sensitive areas in the AR zone. Those areas include:

- prime soils
- agricultural easements (easement itself would prohibit solar)
- steep slopes

- stream buffers
- wetlands
- forested land

Other considerations for potential review:

- land far from an electric substation (economic limitations)
- ownership size distribution

ZTA 20-01 allows a maximum of 1,800 acres of primary use solar in the AR. There are approximately 93,000 acres in the AR zone. Keeping solar out of these areas reduces the area in which solar would be allowed. Executive staff found that the limitations they used reduced the allowable locations to 900 acres. If the Council agreed with all of Executive staff's "rules", the maximum 1,800 acres for solar would be unreachable.

These sensitive areas overlap. The area in which solar is allowed depends on the limitations the Council wants to impose. Staff will have mapping resources (GIS) to answer the options the Council may wish to include in the ZTA.

I. Expand the definition of accessory solar facilities from 120% of on-site use to 200%

Solar panels as an accessory use is currently limited to 120% of on-site energy consumption (baseline annual customer energy use). There are limits on structure heights. ZTA 20-01 as introduced would not change that limitation. Maryland net metering policy allows a maximum of 200% of on-site energy consumption to take advantage of net metering.[21]

Solar panels as an accessory use does not require site plan approval. There is no maximum height for accessory solar panels. If the Council wants to go in this direction, it needs to decide if the new limit should apply to just the AR zone or all zones.

F:\Land Use\ZTAS\JZYONTZ\2020 ZTAs\20-01 Solar Collection System - AR Zone Standards\ZTA 20-01 PHED-T&E Memo final .doc

[21] Net metering is an electricity billing mechanism that allows consumers who generate some or all of their own electricity to use that electricity anytime, instead of when it is generated. When solar panels produce more electricity than needed, that energy is sent to the grid in exchange for credits.

Zoning Text Amendment No.: 20-01
Concerning: Solar Collection System – AR Zone Standards
Draft No. & Date: 5 – 1/21/20
Introduced: January 21, 2020
Public Hearing:
Adopted:
Effective:

COUNTY COUNCIL FOR MONTGOMERY COUNTY, MARYLAND SITTING AS THE DISTRICT COUNCIL FOR THAT PORTION OF THE MARYLAND-WASHINGTON REGIONAL DISTRICT WITHIN MONTGOMERY COUNTY, MARYLAND

Lead Sponsors: Councilmember Riemer and Council Vice President Hucker
Co-Sponsor: Councilmember Rice

AN AMENDMENT to the Montgomery County Zoning Ordinance to:

- revise the Solar Collection System use standards to allow larger facilities in the AR zone;
- amend the provisions for Solar Collection Systems in other zones; and
- amend the provisions for site plan approval in the AR zone.

By amending the following sections of the Montgomery County Zoning Ordinance, Chapter 59 of the Montgomery County Code:

Division 3.7.	"Miscellaneous Uses"
Section 3.7.2.	"Solar Collection System"
Division 7.3.	"Regulatory Approvals"
Section 7.3.4.	"Site Plan"

EXPLANATION: ***Boldface*** *indicates a Heading or a defined term.*
Underlining indicates text that is added to existing law by the original text amendment.
[*Single boldface brackets****]*** *indicate text that is deleted from existing law by original text amendment.*
Double underlining indicates text that is added to the text amendment by amendment.
[[*Double boldface brackets****]]*** *indicate text that is deleted from the text amendment by amendment.*
* * * *indicates existing law unaffected by the text amendment.*

ORDINANCE

The County Council for Montgomery County, Maryland, sitting as the District Council for that portion of the Maryland-Washington Regional District in Montgomery County, Maryland, approves the following ordinance:

Sec. 1. DIVISION 59-3.7 is amended as follows:

Division 3.7. Miscellaneous Uses

* * *

Section 3.7.2. Solar Collection System

A. Defined

Solar Collection System means an arrangement of panels or other solar energy devices that provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating. A Solar Collection System includes freestanding or mounted devices.

B. Use Standards

Where a Solar Collection System is allowed as a limited use, it must satisfy the following standards:

1. In the Agricultural Reserve zone, all of the standards in Subsection 3.7.2.B.2 and the following standards apply:

[a. A Solar Collection System must be an accessory use as defined in Section 3.1.3.**]**

[b**]**a. Written authorization from the local utility company must be provided for a Solar Collection System that will be connected to the utility grid.

[c**]**b. Removal of trees or landscaping otherwise required or attached as a condition of approval of any plan, application, or permit for the installation or operation of a Solar Collection System is prohibited.

[d. Solar panels may encroach into a setback as allowed under Section 4.1.7.B.5.c and may exceed the maximum height as allowed under Section 4.1.7.C.3.b.**]**

[e. A freestanding Solar Collection System is allowed only as an accessory use where the system produces a maximum of 120% of on-site energy consumption and must satisfy the same development standards as an accessory structure.**]**

c. Except as allowed under Subsection 59.7.3.4.E.5.b, the site must be designated pollinator-friendly under the Maryland Pollinator-Friendly Designation Program.

d. Cumulatively, on all AR zoned land, a maximum of 1,800 acres of land may be covered by solar panels.

2. In Rural Residential, Residential, Commercial/Residential, Employment, and Industrial zones, where a Solar Collection System is allowed as a limited use, **[**it must either satisfy Subsection 59.3.7.2.B.1.a through Subsection 59.3.7.2.B.1.e or**]** it must satisfy the following standards in either subsection a or b:

a. The Solar Collection System must be an accessory use as follows:

i. the system produces a maximum of 120% of on-site energy consumption;

ii. encroachment allowed under Section 4.1.7.B.5.C; and

iii. a maximum height allowed under 4.1.7.C.3.b.

b. The Solar Collection System must satisfy the following standards:

[a**]** i. Site plan approval is required under Section 7.3.4.

[b**]** ii. The site must be a minimum of 3 acres in size.

[c**]** iii. The system may produce a maximum of 2 megawatts (AC).

[d**]** iv. All structures must be:

[i**]** A. 20 feet in height or less;

[ii**]** B. located at least 50 feet from any property line; and

[iii**]** C. surrounded by a minimum 6-foot-tall fence.

[e**]** v. If a structure for a Solar Collection System is located in an area visible to an abutting residential use or a road:

[i**]** A. only solar thermal or photovoltaic panels or shingles may be used;

[ii**]** B. the panels or shingles must use textured glass or an anti-reflective coating; and

[iii**]** C. screening that satisfies Section 59.6.5.3.C.8 (Option A) on the sides of the facility visible from the residential use or road is required.

[f**]** vi. The Solar Collection System must be removed within 12 months of the date when the use is discontinued or abandoned by the system owner or operator, or upon termination of the useful life of the system. The Solar Collection System will be presumed to be discontinued or abandoned if no electricity is generated by the system for a period of 12 continuous months.

[g**]** vii. If licensed by the Public Service Commission, **[**A**]** a system designed to produce more than 2 megawatts (AC) **[**may be allowed as a public utility use under Section 3.6.7.E**]** is not restricted by Chapter 59.

* * *

Sec. 2. DIVISION 59-7.3 is amended as follows:

Division 7.3. Regulatory Approvals

* * *

Section 7.3.4. Site Plan

* * *

E. Necessary Findings

* * *

5. For property zoned AR proposed for use as a Solar Collection system:

a. grading and any soil removal will be minimized; and

b. the site must be designated pollinator-friendly under the Maryland Pollinator-Friendly Designation Program, or any land on which the solar generation facility is located that is not designated as pollinator friendly must be planted, managed, and maintained in a manner suitable for grazing farm animals.

* * *

Sec. 3. Reporting. On April 1, 2021 and annually thereafter**,** the Department of Permitting Services must report to the County Council the total acreage of Solar Collection System permits in the Agricultural Reserve approved by the Department since the effective date of ZTA 20-01.

Sec. 4. Effective date. This ordinance becomes effective 20 days after the date of Council adoption.

This is a correct copy of Council action.

_____

Selena Mendy Singleton, Esq.
Clerk of the Council

MONTGOMERY COUNTY PLANNING BOARD
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

OFFICE OF THE CHAIR

February 24, 2020

TO: The County Council for Montgomery County, Maryland, sitting as the District Council for the Maryland-Washington Regional District in Montgomery County, Maryland

FROM: Montgomery County Planning Board

SUBJECT: Zoning Text Amendment No. 20-01

BOARD RECOMMENDATION

The Montgomery County Planning Board of The Maryland–National Capital Park and Planning Commission reviewed Zoning Text Amendment No. 20-01 (ZTA 20-01) at its regular meeting on February 20, 2020. By a vote of 4:0, (Commissioner Cichy absent from the hearing) the Planning Board recommends approval of the ZTA with modifications and additional comments (as discussed below), to revise the Solar Collection System use standards to allow larger facilities in the Agricultural Reserve (AR) zone, amend the provisions for Solar Collection Systems in other zones, and amend the provision for site plan approval in the AR zone. Currently, a Solar Collection System in the Agricultural Reserve is limited to an accessory use.

The Board believes that ZTA 20-01 – if modified as recommended in the separate attached ZTA – can strike a balance in addressing the desire to provide more solar production opportunities in the County, including the ability to provide "Community Solar" benefits to those who cannot, or prefer not to, install solar panels on their homes, with the protection measures for properties that are near these facilities. In the case of solar facilities that are not accessory to a principle use, the legislation continues to require site plan approval and provides limitations on the size of the overall system and the height of any freestanding structure.

For a Solar Collection System located in the AR zone, in addition to the aforementioned standards, inclusion of requirements that the ground underneath the panels have pollinator-friendly plants or is suitable for grazing or crop production, that soil and tree removal is minimized, and that a limitation be placed on the amount of agricultural land that can be developed as a Solar Collection System, further assists in reducing the impacts of solar collection as a principle use in the AR zone. However, the Planning Board is also recommending additional requirements that will further strengthen the goal of having Solar Collection Systems in the AR zone be compatible with other public policy goals including agricultural production, environmental sustainability, and Agritourism. These standards pertain to:

- discouraging development on prime agricultural soils,
- prohibiting development on slopes greater than 15% or on an area that has highly erodible soil; and
- prohibiting development on soils that have been delineated as seasonally flooding or saturated.

In addition, the Board identified important issues to be further discussed during site plan review as follows:

- the protection of scenic views identified in the Rustic Roads Functional Master Plan through site plan review,
- removing the fence requirement in the AR zone, recognizing that screening options can be further examined during site plan review.

The Board also believes that the limited area recommended for inclusion for potential development of Solar Collection Systems in the AR zone (1,800 acres or approximately two percent of the total 93,000 acres of the Agricultural Reserve) represents a small enough area of the Agricultural Reserve to not significantly compromise the Master Plan for Preservation of Agricultural and Rural Open Space's designation of farm land and agriculture as the preferred land use in the Agricultural Reserve. Again, please note that the Planning Board's modified text in the separate attachment to this transmittal, includes several clarifications and additional requirements to further strengthen the protections provided by the ZTA as introduced.

Finally, given the numerous requests by community members to delay action on this ZTA until the Climate Action Plan Technical Workgroups have proposed their comprehensive recommendations on reducing carbon emissions, the Planning Board requests that the County Council consider transmitting ZTA 20-01 to the applicable workgroups for their comments, in lieu of indefinitely tabling the legislation.

CERTIFICATION

This is to certify that the attached report is a true and correct copy of the technical staff report and the foregoing is the recommendation adopted by the Montgomery County Planning Board of The Maryland-National Capital Park and Planning Commission, at its regular meeting held in Silver Spring, Maryland, on Thursday, February 20, 2020.

Casey Anderson
Chair

CA:GR:aj

MCPB
Item No. 6
Date: 2-20-20

Zoning Text Amendment (ZTA) No. 20-01, Solar Collection System - Standards

GR Gregory Russ, Planner Coordinator, FP&P, gregory.russ@montgomeryplanning.org, 301-495-2174
JS Jason Sartori, Chief, FP&P, jason.sartori@montgomeryplanning.org, 301-495-2172

Completed: 02/13/20

Description

As defined under Section 59.3.7.2.A, Solar Collection System means an arrangement of panels or other solar energy devices that provide for the collection, inversion, storage, and distribution of solar energy for electricity generation, space heating, space cooling, or water heating. A Solar Collection System includes freestanding or mounted devices.

Zoning Text Amendment (ZTA) 20-01 would revise the Solar Collection System use standards to allow larger facilities in the Agricultural Reserve (AR) zone, amend the provisions for Solar Collection Systems in other zones, and amend the provision for site plan approval in the AR zone. Currently, a Solar Collection System in the Agricultural Reserve is limited to an accessory use.

Summary

Staff recommends approval of ZTA No. 20-01, with modifications, to revise the Solar Collection System use standards to allow larger facilities in the Agricultural Reserve (AR) zone, amend the provisions for Solar Collection Systems in other zones, and amend the provision for site plan approval in the AR zone. Staff believes that ZTA 20-01 – if modified as recommended in this report - can strike a balance in addressing the desire to provide more solar production opportunities in the County, including the ability to provide "Community Solar" benefits to those who cannot, or prefer not to, install solar panels on their homes, with the protection measures for properties that are near these facilities. In the case of solar facilities that are not accessory to a principle use, the legislation continues to require site plan approval and provides limitations on the size of the overall system and the height of any freestanding structure.

For a Solar Collection System located in the AR zone, in addition to the aforementioned standards, inclusion of requirements that the ground underneath the panels have pollinator-friendly plants or is suitable for grazing or crop production, that soil and tree removal is minimized, and that a limitation be placed on the amount of agricultural land that can be developed as a Solar Collection System, further assists in reducing the impacts of solar collection as a principle use in the AR zone. However, staff is recommending additional requirements that will further strengthen the goal of having Solar Collection Systems in the AR zone be compatible with other public policy goals including agricultural production, environmental sustainability, and Agritourism. Staff also believes that the limited area recommended for inclusion for potential development of Solar Collection Systems in the AR zone

(1,800 acres or approximately two percent of the total 93,000 acres of the Agricultural Reserve) represents a small enough area of the Agricultural Reserve to not significantly compromise the Master Plan for Preservation of Agricultural and Rural Open Space's designation of farm land and agriculture as the preferred land use in the Agricultural Reserve. Again, please note that within the staff report, staff has recommended several clarifications and recommended additional requirements to further strengthen the protections provided by the ZTA as introduced.

Background/Analysis

On May 15, 2018 the County Council adopted ZTA 18-01 to revise the Solar Collection System use standards to allow larger facilities in Rural Residential, Residential, Commercial/Residential, Employment, and Industrial zones. The sponsors of ZTA 18-01 believed that the public interest would be served by expanding the opportunities for solar production in areas where development is anticipated. The ZTA retained the accessory use limitation on solar collection systems in the Agricultural Reserve (AR) zone. The ZTA included standards to prevent glare and to buffer the facility from surrounding land uses. The ZTA provided more opportunities for community oriented solar facilities. Community oriented solar facilities offer the benefit of solar to those who can't, or prefer not to, install solar panels on their homes. These projects enable individuals, businesses, or organizations to purchase or lease a "share" in a community solar project. Shared solar means photovoltaic (PV) systems can be somewhere else in the community (in a field, on a building, over a parking lot, and elsewhere) but provide the benefits of solar electricity to participating subscribers.

ZTA 20-01, Solar Collection Systems – AR Zone Standards, would allow a targeted deployment of community solar projects on farms in the County's Agricultural Reserve.

Rationale for ZTA Introduction (*Excerpt from Fact Sheet prepared by the Sponsors of ZTA 20-01*)

ZTA 20-01 would limit the applicability of the legislation to 1,800 acres (or about two percent) of the County's 93,000-acre Agricultural Reserve for community solar as a limited use. Currently, the zoning code prohibits community solar in the Agricultural Reserve.

> "As a national environmental leader, Montgomery County has declared a climate emergency and committed to "100 percent elimination" of carbon emissions by 2035 (and 80 percent by 2027). Eliminating carbon emissions will require tackling their sources -- the emissions that come from fossil fuels used to power buildings and transportation, particularly. According to the Metropolitan Washington Council of Governments, 51 percent of County emissions come from the energy used to power our buildings. Achieving a quicker reduction of buildings' emissions requires transforming the sources of energy that our buildings use. That means increasing solar energy production.
>
> Maryland's community solar law allows solar providers to sell solar energy to larger groups of consumers -- groups of houses or apartment communities -- who cannot or have not yet installed solar panels. Community solar farms are smaller than "utility scale" arrays; they only require 10 to 12 acres of land. They may produce up to two megawatts of electricity (or about 4,464,000 kWh's) annually, which replaces energy derived from fossil fuels in the electrical grid.

More specifically, each two-megawatt community solar project avoids the creation of 3,156 metric tons of carbon emissions. That is equivalent to the emissions created by 364 homes in one year. Extrapolating to the full buildout of 1,800 acres in the County's Agricultural Reserve, the solar energy produced would provide enough clean energy for 54,631 homes. Zooming out a bit further, a full buildout under this ZTA would reduce approximately 473,434 metric tons of carbon emissions, or 4.4 percent of the County's total emissions. That would be a sizable step toward meeting the County's climate goals. By contrast, rooftop solar mandates for new construction would take decades to achieve the same level of energy substitution and emissions reduction."

ZTA 20-01 includes a number of provisions to support agriculture, including requirements that the ground under the panels have pollinator-friendly plants or is suitable for grazing and that soil and tree removal is minimized. It also has site size, setback, height and fencing requirements. The goal of this ZTA is to get solar deployed quickly while limiting its impact on the overall Agricultural Reserve. To achieve that balance, community solar is limited to two percent of the Agricultural Reserve (1,800 acres).

Specifically, ZTA 20-01 modifies the Solar Collection System provisions as discussed below:

- **Eliminates the limited use provision requiring that a Solar Collection System located in the Agricultural Reserve zone only be an accessory use.** The ZTA retains language allowing a Solar Collection System as an accessory use in the Agricultural Reserve, Rural Residential, Residential, Commercial/Residential, Employment, and Industrial zones but does not require such. In addition to the current standards for a Solar Collection System in the non-Agricultural Reserve zones (see bullet below), the limited use standards for solar as a principle use in the Agricultural Reserve zone include several of the applicable existing accessory use standards (written authorization from the local utility company when proposed to be connected to the grid, and prohibition of the removal of trees or landscaping otherwise required or attached as a condition of approval of any plan, application, or permit), and two additional standards requiring that: the site be designated pollinator-friendly under the Maryland Pollinator-Friendly Designation Program[1] (except as allowed under Subsection 59.7.3.4.E.5.b., site plan review, necessary findings); and cumulatively, on all AR zoned land, a maximum of 1,800 acres of land may be covered by solar panels. Under the Necessary Finding for site plan review, property zoned AR proposed for use as a Solar Collection system must: minimize grading and any soil removal; and be designated pollinator-friendly under the Maryland Pollinator-Friendly Designation Program, or any land on which the solar generation facility is located that is not designated as pollinator friendly must be planted, managed, and maintained in a manner suitable for grazing farm animals. (*Lines 12-36, 48-77 and 84-92*)

- **In Rural Residential, Residential, Commercial/Residential, Employment and Industrial zones, where a Solar Collection System is allowed as a limited use, the ZTA continues to allow the use as an accessory use or as a principle use.** As an accessory use, the standards as proposed under

[1] The Pollinator-Friendly Designation Program bill (SB 1158) was signed by Governor Larry Hogan in May 2017. SB 1158 established a pollinator-friendly designation program for commercial ground-mounted solar facilities. The bill has a scorecard attached which will serve as the initial basis for pollinator-friendly designation of a site.

Subsection 3.7.2.B.2.a. apply (all of which were originally included under the accessory use provisions under the Agricultural Reserve zone). These include:

- the system produces a maximum of 120% of on-site energy consumption;
- encroachment allowed under Section 4.1.7.B.5.C (*may project a maximum of 3 feet into any side setback, or any side street setback of less than 25 feet and may project a maximum of 9 feet into any front setback, rear setback, or any side street setback where the side street setback is a minimum of 25 feet*); and
- a maximum height allowed under 4.1.7.C.3.b. (*maximum height does not apply to solar panels, except in the CRT, CR, Employment, and Industrial zones, solar panels may exceed the established height limit by up to 8 feet, except when located within an airport approach area*)

As a principle use, the following limited use standards apply (*Lines 48-77*):

- Site plan approval is required
- The site must be a minimum of 3 acres in size
- All structures must be: 20 feet in height or less; at least 50 feet from any property line; and surrounded by a minimum 6-foot-tall fence. **Staff believes that fencing should not be allowed to surround a Solar Collection System in the AR zone, as this standard would be unsuitable for establishing grazing for animals. Staff has modified the ZTA to reflect this recommendation.**
- If located in an area visible to an abutting residential use or a road: only solar thermal or photovoltaic panels or shingles may be used; the panels or shingles must use textured glass or an anti-reflective coating; and screening that satisfies Section 59.6.5.3.C.8 (Option A) on the sides of the facility visible from the residential use or road is required (minimum depth of screening must be between 30 and 50 feet and must include a 6 foot in height fence or wall).
- The Solar Collection System must be removed within 12 months of the date when the use is discontinued or abandoned by the system owner or operator, or upon termination of the useful life of the system.
- A system designed to produce more than 2 megawatts (AC) may be allowed as a public utility use.

Community Correspondence

Concerns have been expressed about ZTA 20-01 in that it: would take fertile farmland out of production; would price farmers out of the Ag Reserve; would possibly damage habitats and forests; is not in line with the master plan; takes green space and sites panels far from power infrastructure.

The comments further recommend that this ZTA be tabled until the Climate Action Plan Technical Workgroups[2] have proposed their comprehensive recommendations for how the County can reduce its carbon emissions. They believe that this County-funded, collaborative and public effort should guide next steps.

Staff Comments

As written, the ZTA requires all Solar Collection Systems (SCS) located in the AR Zone to be Pollinator-Friendly or suitable for grazing. The text makes no distinction as to whether this applies to an accessory SCS and a SCS as a principle use or to only the SCS as a principle use. Staff assumes that this standard would apply only to a SCS as a principle use given that the Pollinator-Friendly Program is intended for commercial ground-mounted solar facilities. ***Staff recommends clarifying the ZTA language to reflect that only in the case of a SCS as a principle use is the ground beneath the panels required to include pollinator-friendly plants or be suitable for grazing of animals. In addition, staff not only believes that land could be made suitable for grazing of animals, but also could be made suitable for crop production. Staff has modified the ZTA language to reflect this recommendation.***

The ZTA also carries forward existing restrictions on accessory SCSs in the AR zone (written authorization from the local utility company when connected to the grid, and a prohibition of the removal of trees or landscaping otherwise required or attached as a condition of approval of any plan, application, or permit) for any SCS in the AR zone. ***Staff believes that these two restrictions should be applied to SCSs in all zones.***

Staff further recommends the following additional standards for the placement of a Solar Collection System as a principle use in the AR Zone:

1) **The use must not be located within a scenic view identified in the Rustic Roads Functional Master Plan**
2) **The use must not be located on Prime Agricultural Soils as identified by USDA or Montgomery County Soil Conservation Service**
3) **The use must not be located on naturally occurring slopes in excess of 8%**
4) **The use must not be located on soils that are seasonally flooded or saturated as identified by USDA or Montgomery County Soil Conservation Service**

Conclusion

Staff believes that ZTA 20-01 – with the recommended modifications – can strike a balance in addressing the desire to provide more solar production opportunities in the County, including the ability to provide

[2] In July 2019, Montgomery County launched a planning process to develop prioritized actions and strategies to meet the County's greenhouse gas emissions reduction goals. The County intends to finalize a Climate Action Plan by December of 2020 that will provide a roadmap to achieve carbon neutrality and will also include recommendations for adapting to a changing climate. (For more information, visit https://www.montgomerycountymd.gov/green/climate/climate-action-planning.html.)

"Community Solar" benefits to those who can't, or prefer not to, install solar panels on their homes, with the protection measures for properties that are near these facilities. In the case of solar facilities that are not accessory to a principle use, the legislation continues to require site plan approval and provides limitations on the size of the overall system and the height of any freestanding structure.

For a Solar Collection System located in the AR zone, in addition to the aforementioned standards, inclusion of a requirement that the ground underneath the panels have pollinator-friendly plants or is suitable for grazing or crop production, that soil and tree removal is minimized, and that a limitation be placed on the amount of agricultural land that can be developed as a Solar Collection System, further assists in reducing the impacts of solar collection as a principle use in the AR zone. Staff believes that the limited area recommended for inclusion for potential development of Solar Collection Systems in the AR zone (1,800 acres or approximately two percent of the total 93,000 acres of the Agricultural Reserve) represents a small enough area of the Agricultural Reserve to not significantly compromise the **Master Plan for Preservation of Agricultural and Rural Open Space's** designation of farm land and agriculture as the preferred land use in the Agricultural Reserve.

Staff has included, as a modification to the ZTA (Attachment 1), ***clarifying language to reflect that only in the case of a Solar Collection System as a principle use is the ground beneath the panels required to include pollinator-friendly plants or is made suitable for grazing of animals or crop production. Staff also believes that the language currently proposed only for the AR zone that requires written authorization from the local utility company when a Solar Collection System is proposed to be connected to the grid, and the language prohibiting the removal of trees or landscaping otherwise required or attached as a condition of approval of any plan, application, or permit, should be included for all zones.***

Staff has also included in the modified ZTA language, several additional standards that further protect the integrity of the Agricultural Reserve. These standards pertain to protection of scenic views, discouraging development on prime agricultural soils, prohibiting development on slopes greater than 8% and prohibiting development on soils that have been delineated as seasonally flooding or saturated.

Attachments

1. ZTA No. 20-01 as modified by staff.

Good evening. Adriana Hochberg testifying on behalf of County Executive Elrich.

Combatting the climate emergency calls for transitioning to renewable sources of energy, including locally-generated solar energy. At the request of the County Executive, an interdepartmental "solar mapping" team began meeting in November 2019 to discuss to what extent solar power can meet our county's future energy needs. We looked at how much solar has already been installed, how much electricity the county would need to meet three different scenarios of fossil-fuel replacement, and how each scenario would translate to acreage needed for solar installations. (The solar mapping analysis slides are attached here; they will also be posted to the County's climate planning webpage by the end of the week).

We applied filters to the county's total land area of 320,000 acres to determine the theoretical area available for ground-mounted solar installations. In the subset of 94,000 acres in the Agricultural Reserve, we used filters based on soil quality, tree cover, 150' buffers from hydrologic features, proximity to utility substations, and agricultural easements – filters that would protect the environment and retain the primary purpose of the Agricultural Reserve, which is to promote agriculture as the primary land use. The results of this mapping exercise indicate that, at best, approximately 900 acres of open land in the Ag Reserve might be able to accommodate ground-mounted solar installations. These results don't support ZTA 20-01's designation of up to 1,800 cumulative acres in the Ag Reserve to be covered with solar panels.

We found that if we want to use solar power to replace all current electricity consumption and electrify transportation and natural gas appliances, we would need somewhere between 43,000 and 170,000 acres of open land – a wide divergence of estimates resulting from differing calculations used to determine the amount of sunshine (and, therefore, solar power) we can expect in an average year. That said, even the smaller number is a vast amount of acreage, so we looked beyond the Ag Reserve to open land in other rural and urban areas, parking lots, garages, roof areas, and under transmission lines. The data provides a reality check – all in, these areas get us to about 30,000 acres under the most optimistic calculations.

The County Executive believes this demonstrates the complexities as well as the urgency of responding to climate change, requiring us to rethink the way we meet our energy needs and to find ways to use energy more efficiently. Our solar mapping team has recommended looking at several initiatives, including ways to remove potential barriers to solar implementation; what the state and other local jurisdictions are doing to incentivize solar; reviewing up-and-coming solar technologies such as solar roads and sidewalks, solar windows, solar walls, and solar fabrics; net metering laws; local zoning and land use laws; upfront costs; access to unbiased information; and opportunities for off-shore wind. In addition, the climate workgroups developed recommendations for greening the energy supply and expanding the use of distributed renewable

energy in the county; their recommendations are now available for public review and comment on the County's climate webpage (montgomerycountymd.gov/climate)

Based on the work done by the solar mapping team and by the climate workgroups over the last several months, the County Executive believes it is premature to adopt legislation that sets potential acreage for solar arrays in the Ag Reserve at twice the number of acres identified as possibly suitable through our mapping process. The primary function of the Agricultural Reserve is – and should remain - agricultural production. It is extremely important to preserve its integrity. Local food production and regenerative farming are important tools to help the county become more resilient to a changing climate and to sequester carbon—pulling it out of the atmosphere and into the soil.

In conclusion, while it is reasonable to expect that all parts of the County should contribute to local solar generation, we should avoid placing solar panels on productive agricultural soils. To the extent that solar is sited within the Agricultural Reserve, it should be limited to unused land that isn't productive and falls outside of the other filters identified by the solar mapping team. The county will be well served if our approach to solar generation is countywide in scope and includes major efforts to reduce energy usage.

The County Executive asks that you factor in this additional information when considering the changes being proposed in ZTA 20-01. Members of our solar mapping team are available to the PHED Committee and councilmembers during the review process. The County Executive will be providing technical comments on the ZTA later in the process.

Thank you.

Solar Energy in Montgomery County

FEBRUARY 2020

1

Overview

1. Framing questions
2. Exploring the data
3. Barriers to widespread solar implementation
4. Up-and-coming solar technologies

2

Framing Questions

How much solar is already installed in the County?

How much electricity does Montgomery County need under different scenarios, and how does that translate to solar acreage?

How much solar capacity does Montgomery County have?

3

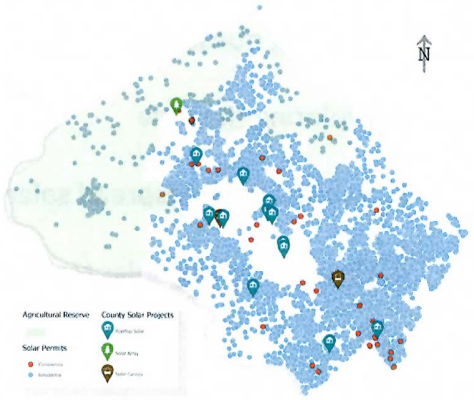
Exploring the Data

How much solar is already installed in the County?

The short answer is that we don't have a complete picture of amount of solar energy currently being generated in the county.

What we do know:[1]

- 16 County Solar Projects
- 9,295 Residential Solar Permits
- 66 Commercial Solar Permits



[1] Data based on permits from the County's Department of Permitting Services and does not include permits issued through Rockville or Gaithersburg. This accounts for the large "hole" in the middle of the County.

4

Exploring the Data

How much electricity does Montgomery County need under different scenarios, and how does that translate to solar acreage?

Electrification Scenarios Explored:*

Scenario 1	Scenario 2	Scenario 3
• All current electricity needs produced by solar.	• All current electricity needs produced by solar. • Electrification of transportation.	• All current electricity needs produced by solar. • Electrification of transportation and natural gas appliances.
23,000 acres – 70,000 acres	**30,000 acres – 100,000 acres**	**43,000 acres – 170,000 acres**

*Scenario estimates are based on two independent estimates of how much solar is necessary to power the county. These are "back of the envelope" calculations subject to further refinement.

5

Exploring the Data

Production per Acre

= ?

Based on Average Annual Production	Based on Winter Months (Dec. and Jan) Only
• 438,000 kWh per year • Powers 42 houses	• 25,000 – 60,000 kWh over the two winter months • Powers 6-14 houses.

6

Exploring the Data

How much solar capacity does Montgomery County have?

Typical Locations
- Ground mounted systems on open land
- Parking lots & garages
- Rooftops

Atypical Locations?
- Transmission lines
- Building facade
- Window replacement
- Noise walls

This analysis focuses on the theoretical area available for locating solar on typical locations. It does not incorporate limitations due to solar orientation, roof condition, competing uses of the space, etc. As such, this analysis is a "theoretical ceiling" of the acreage is available for solar in the County.

7

Theoretical Area of "Open" Land

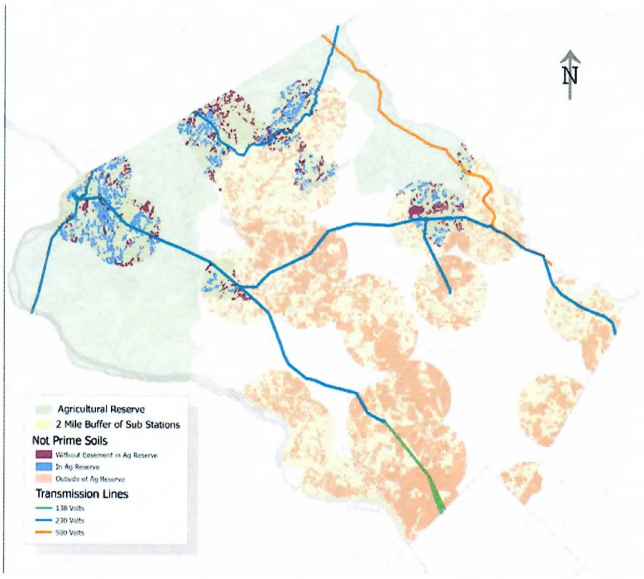
- **Applied filters to open land area in County to determine theoretical area available for ground mount solar installations on open land**
- **Does not factor in:**
  - Parcel configuration (i.e., adds all land area regardless of shape)
  - Slope of land (i.e., may slope toward north)

Category	Acreage
Total land area in County	~320,000
Subset not on "prime" soils[1]	~127,900
Subset without trees and impervious area; outside 150' buffer from hydrologic feature	~20,900
Subset within two miles of utility substation[2]	~12,100
Subset within Agricultural Reserve	~2,500
Subset without Agricultural Easement	~900

[1] Prime soils = Class I – III; non-prime soils = Class IV-VII.
[2] Utility-scale solar projects are usually located near substations to avoid costs of new transmission infrastructure. Acceptable distance from substations depends on the project size and site-specific details. Such details are not included in this analysis.

8

Theoretical Area of "Open" Land



9

Theoretical Area of "Open" Land in a Rural Area

10

Theoretical Area of "Open" Land in an Urban Area

11

Theoretical Area of Parking Lots & Garages

- Calculated total area of parking lots and garages in County
- Does not factor in:
  - Lot/garage configuration (i.e., adds all parking area regardless of shape)
  - Orientation of parking lot and potential obstructions (e.g., trees, buildings, etc.)

Property Type	Acres of Parking Lots	Acres of Parking Garages
Housing Opportunities Commission	13.20	-
Montgomery County	343.00	16.47
Montgomery College	37.38	1.09
Schools	372.93	-
Volunteer Fire Departments	13.06	-
Agricultural	140.30	-
Multi-Family Residential	290.72	1.03
Townhomes	7.27	-
Single Family Homes	92.37	-
Non-Profit	442.63	1.35
Non-Residential	2,948.93	42.66
Veteran's Organizations	1.07	-
WMATA	61.00	8.38
WSSC	20.21	-
MNCPPC	123.26	-
Gaithersburg	628.79	11.06
Rockville	559.50	11.01
Takoma Park	60.66	0.64
Embassy	4.57	-
Federal	259.88	8.49
Maryland	57.44	0.13
Total	6,478.15	102.34

12

Theoretical Roof Areas: Commercial & Industrial

- **Calculated total area of roofs in County.**
- **Does not factor in:**
  - Roofs less than 5,000 sq.ft. in area.
  - Shape of roof, orientation, and potential obstructions (mechanical equipment, outdoor amenities, etc.)

Landuse	Sum of Roof Areas ≥ 5,000 sqft	Acres
Industrial	5,576,716.48	128.02
Office	23,846,036.33	547.43
Retail	31,634,999.99	726.24
Warehouse	10,536,055.16	241.87
Total		1,643.57

13

Theoretical Roof Areas: Residential & Institutional

- **Does not factor in:**
  - Roofs associated with Housing Opportunities Commission, Montgomery College, Volunteer Fire Departments, municipal buildings, state government buildings, federal buildings, WMATA, MNCPPC, WSSC

Property Type	Acres of Rooftop	Acres of Rooftop w/ Solar Permit
Montgomery County Schools	222.86 430.53	
Multi-Family Residential	501.72	-
Townhomes	854.34	25.36
Single Family Homes	7,527.71	366.04
Total	9,537.15	391.40

14

Theoretical Area Under Transmission Lines

- **Total area available under transmission lines: 1,415 Acres.**
- Includes area that is:
  - Pepco owned
  - Without trees
  - Impervious
  - Outside of 150 ft buffer from hydrologic features.

Photo: Charlie Ban, Oct. 2018

15

Summary: Total Theoretical Land Available

Type of Land	Total Available Area (acres)
Open Land	12,100
Parking Lots and Garages	6,580
Building Roofs (Commercial)	1,644
Building Roofs (Residential & Institutional)	9,146
Transmission Lines	1,415
Total	**30,885**

16

Potential Barriers to Widespread Solar Implementation

- **Maryland Net Metering Law**
  - Net metering allows sale of excess power to utility at retail rates; critical to economics of many solar installations
  - Current cap on total net metered capacity = 1,500 MW (772 MW installed as of June 30, 2018)
  - Current cap on single project = 2 MW
- **Local zoning and land use laws and practices**
- **Upfront costs**
- **Access to unbiased information**

17

Up-and-coming Solar Technologies

- Solar roads and sidewalks.
- Solar windows.
- Solar skin.
- Solar fabric.

18

Appendix I

Fiscal Impact

ZTA 20-01 would allow 1,800 acres of farmland in the County to install solar panels and would effectively change the use from agricultural to commercial. The fiscal impact of solar on farm assessed land is dependent on whether the change is within the Charter Limit. If it is within the Charter Limit, there would be virtually no fiscal impact. The added value would only lower every other property owner's tax.

Section 305 of the County Charter allows certain exclusions when calculating the "Charter Limit" for real property tax revenues.[1] Exclusion #4 in §305 states that revenue from a "property that has undergone a change in use" does not apply to the Charter Limit.

Maryland law allows agricultural land to be assessed differently than other uses. The law suppresses the land value to help preserve the State's agricultural land. The Maryland Department of Assessment and Taxation (SDAT) is responsible for implementing this law and assessing land values. SDAT assesses agricultural land on a per acre basis, and the amount varies between $125 to $500 per acre for active agricultural use.

Agricultural properties that elect to install solar panels are selecting a different use for that property, and this acreage should be subject to the exclusion from the Charter Limit and no longer receive the benefit of lower assessments for agricultural use. Council staff provides analysis below about how this change may benefit the County's real property tax revenues; however, the County must be informed by SDAT that a change in use has occurred. **If SDAT does not classify the tax bill as a change in use and elects to reassess the property during the normal three-year cycle, the property will not be excluded from the Charter Limit calculations.**

The table below provides data for properties that recently installed solar panels. A few important notes about this data.

1) Properties with solar panels are difficult to identify in SDAT. Council staff relied on information from a local industry group that tracks this information. Nine properties were identified, but only three properties received a change in assessments as of 2020.
2) There is wide variation between the three properties. This makes it difficult to determine an accurate range for the estimating the increase in value after the solar panels are installed.
3) SDAT lists the total acreage for the property. The actual acreage used by the solar panels is unknown but is less than the total acreage.

Table X: Solar Farm Comps in Maryland

Property	Acres	Value as Ag.	Value with Solar	Difference	Increase Value
#1	62.4	$14,400	$305,400	$291,000	21 times
#2	23.5	$255,900	$714,500	$458,600	3 times
#3	279.1	$170,200	$1,387,300	$1,217,100	8 times

Increase Value equals the value per acre with solar divided by value per acre as only agricultural use.

[1] The Charter Limit is calculated using the estimated amount of real property tax revenues collected in the current fiscal year and the percentage growth of the Consumer Price Index from the previous calendar year. The Charter includes five exclusions: 1) newly constructed properties; 2) newly rezoned properties; 3) property assessed differently due to a change in State law; 4) property with a change in use; and 5) development district tax used to fund capital improvement projects.

Council staff used the following assumptions to calculate the change in real property tax revenues from properties that install solar panels due to ZTA 20-01.

- Assumed that SDAT identified the properties for reassessment outside of the triennial cycle. This would result in new revenues to the County.
- Assumed a $500 per acre for agricultural use in the County. This is the maximum value allowed by the State.
- Assumed an increase value of 11 times for changing use from agricultural only to installing solar panels. This is the average of the Increase Value in Table X.
- Assumed that 10% of the allowable acreage would be converted to solar installation a year. With this assumption, the County would convert 180 acres of agricultural land to solar panel use every year, taking 10 years to exhaust the pool of acres for this type of conversion.
- Assumed a weighted real property tax rate of $0.9785 per $100 of assessed value. This is the FY21 weighted real property tax rate.
- Assumed no changes in the personal property taxes. An analysis of the current properties that have installed solar panels revel that most do not receive an increase in this type of tax due to the incorporation of the business (e.g., non-profit).

The table below shows the added value per year if 180 acres is converted to this use and using the assumptions above.

Table X

Acres	Value as Ag	Value with Solar	Difference	New Taxes
180	$90,000	$990,000	$984,500	$9,633

The County would add approximately $10,000 in additional real property tax revenues per year if 180 acres of agricultural land are converted to solar panels. The total new revenues generated would be approximately $100,000 during a ten-year period if the entire pool of allowable acres is consumed for this new use.

APPENDIX II:

Table 1: List of Pollinator-Friendly Designated Plants:

Native Perennial Flowers (Early Season: April - June):
Field Pussytoes
Wild Columbine
False Blue Indigo
Yellow Wild Indigo
Lanceleaf Coreopsis
Threadleaf Coreopsis
Dutchman's Breeches
Wild Geranium
Golden Ragwort
Foxglove Beardtongue
Eastern Smooth Beardtongue
Creeping Phlox
Wild Blue Phlox
Moss Phlox
Bloodroot
Foamflower
Violets
Golden Alexander

Non-Native Pollinator-Friendly Plants:
Yarrow
Anise Hyssop
Chives
Dill
Borage
Fennel
Blanket Flower
Lavender
Basil
Oregano
Parsley
Sedum
Lemon Thyme
Common Thyme

Native Perennial Flowers (Mid-Season Bloom: July/August):
Swamp Milkweed
Common Milkweed
Butterfly Weed
Pink Tickseed
Purple Coneflower
Joe Pye
Boneset
Common Sneezewood
Perennial Sunflowers
Oxeye Sunflower
Blazing Star
Cardinal Flower
Great Blue Lobelia
Scarlet Bee Balm
Wild Bergamot
Spotted Bee Balm (Horsemint)
Obedient Plant
Mountain Mint
Orange Coneflower
Black-eyed Susan
Cutleaf Coneflower
Spiderwort
Culver's Root

Native Trees:
Red Buckeye
Serviceberry
Birch
Redbud
Hackberry
White Fringetree
Flowering Dogwood
American Holly
Tulip Popular
American Hophornbeam
Sourwood
Chokecherry
Pin Oak, White Oak, Red Oak
Black Locust
Black Willow, Pussy Willow
Sassafrass
Basswood

Native Perennial Flowers (Late Fall Bloom (September/October):
Blue Mistflower
Thoroughwort
White Wood Aster
Brown-eyed Susan
Canadian Goldenrod
Gray Goldenrod
Wrinkleleaf Goldenrod
Smooth Aster
New England Aster
New York Ironweed

Native Shrubs:
New Jersey Tea
Buttonbush
Summersweet
Pagoda Dogwood
Silky Dogwood
Red Twig Dogwood
Smooth Hydrangea
Ilex glabra, Inkberry Holly
Winterberry Holly
Virginia Sweetspire
Mountain Laurel
Spicebush
Sumac
Carolina Rose
Swamp Rose
Virginia Rose
Allegheny Blackberry
Blueberry
Viburnum

List of Agrivoltaic Farms in Maryland:

A. Fritz Family Farms (New Windsor, Maryland)
B. Sunnyside Farms Inc. (Westminster, Maryland)
C. Perdue Farms (Salisbury, Maryland)
D. District Farms (Frederick County, Maryland) (Approved in June 2020)
E. Metzger Farm (Fair Hill, Maryland)
F. Liberty Delight Farms (Reisterstown, Maryland)
G. Rusty Rooster Farm (Worton, Maryland)

Examples of Agrivoltaic Projects:

- **Pollinator-Friendly Solar Projects**
  - **Perdue Farms**[1] (Salisbury, Maryland) - poultry farm integrated solar panels in a space that was previously just gravel, roughly the same cost to maintain but with more benefit, able to grow soybeans which feed their poultry, along with other pollinator species. In total, more than 250,000 native and pollinator-friendly plants are growing on the solar array adjacent to Perdue Farms' headquarters.
- **Grazers and Solar Panels**
  - **Silicon Ranch** (Tennessee): combination of grazing animal, native plants and solar energy. "Adaptively-managed grazing animals, diverse native plants, pollinator habitat and wildlife work together to revitalize soil, enhance biodiversity and resilient ecosystems, sequester carbon in the soil, and strengthen rural economies."[2]
  - Sheep Farming- "Sheep are excellent at vegetation maintenance because they eat almost anything that grows and they're short enough to fit under panels and take advantage of their shade and shelter from the elements."[3] Collaborative projects between solar farms and sheep farmers in New York, Florida, Tennessee.
- **Regenerative Farming with Solar Energy**
  - Regenerative Agriculture Meets Solar Farm in New Partnership[4]
  - "Silicon Ranch has begun implementing regenerative agriculture practices on operating projects in Colorado, Tennessee, Arkansas and Mississippi"[5] It is possible to combine regenerative farming practices with solar energy.
  - "Using native plants as ground cover can help recharge groundwater, reduce erosion, and improve soil carbon sequestration."[6]
- **Solar Farm Apiaries**
  - Bees Find Solar Sanctuary[7]
  - Flowering Solar Farms[8]
  - The New Fallow Land: Bees and Solar Farms[9]
- **Wineries and Solar Power**

[1] https://www.solarpowerworldonline.com/2020/06/perdue-farms-pollinator-friendly-solar-project/
[2] https://www.solarpowerworldonline.com/2019/06/silicon-ranch-sets-up-program-to-bring-more-grazing-animals-and-native-plants-to-its-solar-projects/
[3] https://www.solarpowerworldonline.com/2020/01/solar-sheep-are-eating-away-at-the-om-competition/
[4] https://blog.whiteoakpastures.com/blog/regenerative-energy-solar-farm-silicon-ranch
[5] https://www.solarpowerworldonline.com/2019/06/silicon-ranch-sets-up-program-to-bring-more-grazing-animals-and-native-plants-to-its-solar-projects/
[6] https://www.triplepundit.com/story/2020/pollinator-solar-panels/120691
[7] https://2lwej44565rn2mmjlk31pmwq-wpengine netdna-ssl.com/wp-content/uploads/2019/03/ABF_Quarterly_Q3_final.pdf
[8] https://2lwej44565rn2mmjlk31pmwq-wpengine netdna-ssl.com/wp-content/uploads/2019/03/Jacobs-Flowering-Solar-Farms.pdf
[9] https://2lwej44565rn2mmjlk31pmwq-wpengine netdna-ssl.com/wp-content/uploads/2019/03/Bee-Craft-Jun-2018-bees-and-solar-farms-002.pdf

- Windridge Vineyards (Montgomery County, MD)
- Sunset Hills Vineyard (Purcellville, VA)
- Honig Vineyard & Winery (Rutherford, CA)
- Jordan Vineyard & Winery (Healdsburg, CA)
- Chateau Montelena Winery (Calistoga, CA)

- **Crop Production and Solar Panels:**
  - **List of Common Crops grown under solar panels:** Tomatoes, peppers, beans, carrots, chard, kale, and herbs
  - **Benefits of crop production and solar panels:** Solar panels can benefit crops by keeping them cool during the day due to shading and warmer at night, with the impacts of climate change, protecting crops and increasing yields is more important than ever. Research has shown that solar panels integrated into agriculture can have the potential for reduced water combustion for crops and the water release from the crops to keep the panels cooler, allowing them to be more efficient.

Maryland's INITIAL Solar Site Pollinator Habitat Planning and Assessment Scorecard

Circle each applicable point and then sum/minus.

1. Percent of facility to be planted, seeded or maintained with native plant species:

16-30 percent	5 points
31-50 percent	10 points
51-75 percent	20 points
76 percent or greater	30 points

2. Percent of facility to be planted, seeded or maintained with a mix of native flowering plants including trees and shrubs:

16-30 percent	5 points
31-50 percent	10 points
51-75 percent	20 points
75 percent or greater	30 points

3. Flowering plant seed mix to be used includes ten or more plant species appropriate for the region or local habitat identified in the USDA-NRCS Maryland Native Grass and Wildflower Mixes for dry, mesic or wet sites (Mixes 15, 16 or 17): 5 points

4. Seed mix and/or plants used are pesticide-free, local ecotypes to the extent that it is possible to do so:

Yes	10 points
No	0 points

5. Amount of seed to be planted (lbs/acre) is determined according to seed provider's recommended application rate and/or planting density for planted species in the target area: 5 points

6. Pollinator seed mix includes species that bloom across spring, summer and fall:

Yes	15 points
No	0 points

7. The facility follows established best management practices for site preparation prior to seeding and planting (add all that apply):

Initial herbicide treatment (chemical burn) or scraping of weeds and annual grasses	5 points
Disking or tilling soil to promote weed seed germination with follow-up herbicide treatment	5 points
Follow up maintenance as needed to control weeds	5 points

8. Planned existing best management practices follow established USDA-NRCS Job Sheet Recommendation (Conservation Cover – 327, Herbaceous Plantings for Pollinator Habitat) and Implementation Requirements including (add all that apply):

Pre-establishment mowing of weeds and annual grasses as needed during initial planting period	5 points
Spot herbicide or mechanical invasive species control	5 points
Spot herbicide or mechanical woody species control	5 points
Overseeding or interseeding native wildflowers	5 points
Post-establishment mowing in dormant season only	10 points
Establishment of a detailed habitat maintenance plan	10 points

9. Additional facility practices to support pollinators include (add all that apply):

Water source	5 points
Ground nesting sites (small areas of bare ground)	5 points
Cavity nesting sites (fallen logs, shrubs, snags)	5 points
Woody stems for nesting left >2 years	5 points
Bee Boxes or Bat Boxes	5 points

10. Minimum panel height supports native flowering plants and grasses:

12-18 inches	0 points
24-30 inches	10 points
36 inches or higher	20 points

11. Vegetation buffer outside solar array (add all that apply):

At least 50% planted with native flowering plants	10 points
At least 50% planted with native plants	10 points

12. Education and Signage (add all that apply):

One or more "Pollinator Habitat" signs	5 points
Facility is used for pollinator research	5 points
Education Event regarding pollinator-friendly status	5 points

13. Pesticide Risk:

Routine on-site facility insecticide use	-40 points

Point Summary:

Meets Pollinator-Friendly Standards: 160
Exceeds Pollinator-Friendly Standards: 200
Maximum Points Available: 245

Developer:
Facility Location:
Facility Size:
Target Seeding Date:
Send Email or Completed Forms to:
MD Dept. of Agriculture, MD Dept. of Natural Resources, Power Plant Research Program, 580 Taylor Avenue, B-3, Annapolis, MD 21401

PPRP@maryland.gov

Comments: