



Community Solar in Ag Zone 2023 Work Group

Staff Report to Board of County Commissioners

Department of Land & Resource Management

May 16, 2023

Introduction

Carroll County, Maryland, has a rich agricultural heritage that is maintained through guiding principles outlined in the County Master Plan and implemented through robust programs, such as the County Agricultural Land Preservation Program. As society evolves, it falls upon the Board of County Commissioners to strike the balance of change and maintaining the status quo. Renewable energy options, such as solar energy generating facilities, potentially provide a sustainable community energy solution and a revenue source for property owners, but their development must be balanced with the impacts to our community.

In May 2021, the Board of County Commissioners passed a zoning text amendment that created County Code § 158.153(E), which allowed for the development of Community Solar Energy Generating Systems (CSEGS) in the Agricultural zone. The Board at that time intended to demonstrate a good faith effort to provide opportunities for solar development in the county to discourage State-mandated targets for solar development or Maryland Public Service Commission overriding local requirements. Additional opportunities for solar development would also be consistent with the State's renewable energy goals.

Since that Code amendment, several community solar facility projects were proposed based on current Code requirements. However, there has been opposition to the proposed developments from some of the surrounding communities. Furthermore, the Carroll County Farm Bureau has expressed concern that allowing community solar on agricultural property is an industrialization of the agricultural zone and contrary to the County Master Plan. On March 9, 2023, the Board of County Commissioners passed a six-month moratorium on the processing of this type of development to allow further discussion regarding an appropriate approach to community solar in Carroll County.

The Board directed County staff to convene a work group of citizen stakeholders to discuss the issues and return with options and recommendations for a new code that strikes a better balance for our community. This report documents the results of those work group meetings.



Work Group Composition and Process

The purpose of the Work Group was to obtain opinions and recommendations from stakeholders related to community solar facilities in the Agricultural zone. The Work Group was not a board requiring votes and final determinations on topics of discussion. The following is a summary of the citizen stakeholders who participated in the work group and their affiliation, which reflects the composition directed by the Board.

- Cheryl Bosse – Adjacent property owner to proposed CSEGS
- Charlie Coggeshall – Coalition for Community Solar Access
- Annette Fleishell – Adjacent property owner to proposed CSEGS
- Don Hering – Representative of Carroll County Farm Bureau
- Ralph Robertson – Representative of Carroll County Farm Bureau
- Patricia Toth – Property owner with proposed CSEGS

The following County staff were present during one or more of the work group sessions to help facilitate the discussion and provide subject matter expertise.

- Christopher Heyn – Director, Department of Land and Resource Management
- Brenda Dinne – Special Projects Coordinator, Department of Land and Resource Management
- Laura Matyas – Chief, Bureau of Development Review
- Kierstin Marple – Development Review Coordinator
- Jay Voight – Zoning Administrator
- Ana Yemelyanova – Zoning Inspector
- Mary Lane – Planning Manager, Department of Planning
- Hannah Weber – Comprehensive Planner
- Jonathan Bowman – Forest Conservation and Landscape Specialist

The Work Group met on the following dates.

- April 11, 2023
- April 19, 2023
- April 25, 2023
- May 1, 2023

Meetings were recorded and can be viewed through links on the “Community Solar in Carroll County” website at www.carrollcountymd.gov/communitysolar.

All Work Group member opinions were accepted and documented. This report summarizes those discussions along with staff recommendations. The Work Group members reviewed the draft staff report and offered feedback and clarifications to staff before the report was finalized and provided to the Board. Staff will seek the Board’s direction and then prepare draft text for review and recommendation by the Planning and Zoning Commission.



Discussion Topics

The community solar discussion was separated into two categories of topics – Applicability and Requirements (Specific Criteria). “Applicability” refers to “what” and “where” the code requirement can be applied – what type of proposed development is allowed and where can it be proposed. Once it is determined that the Code is applicable to a proposed project and the project can be developed, the “requirements” are the specific criteria within the Code that apply to that development (whether on a specific property or to that use regardless of location) and that the project must then meet.

Other topics outside of those categories were raised by members of the Board, and other additional topics arose from Work Group discussions. These items are covered in “Other Topics Discussed”. While these topics do not fall under the Applicability and Requirements categories, they are nonetheless also important for the Board to consider.

For purposes of this report, community solar “facility” refers to the panels and all ancillary features, such as the landscaping, access road, inverter, etc.

Existing Applicability

For reference, the following summarizes the existing applicability of §158.153(E) of the County Code:

- ⚙ Community Solar Energy Generating Systems, or CSEGS, or “Community Solar” – The Code only applies to community solar projects as defined by Maryland law. Maryland law currently caps the energy generation from community solar facilities at 5 megawatts (MW). These solar facilities look the same as larger, utility-scale projects but have a business model that requires community subscriptions.
- ⚙ The parcel must be an Agricultural-zoned remaining portion created prior to July 1, 2020. Agricultural remaining portions are parcels in the Agricultural zone that remain after residential subdivision lots have been created through the subdivision process.
- ⚙ Parcels must be 5 acres or larger.
- ⚙ Proposed development of community solar facilities, including panels and all associated infrastructure and features, is limited to 20 acres maximum.
- ⚙ Energy production capacity shall not exceed 2 MW.
- ⚙ Community solar projects are a principal permitted use.



Applicability Topics Discussed

The following are the individual Applicability topics discussed with the Work Group and the results of the discussions.

☀️ **Allowable in Agricultural Zone**

The Board of County Commissioners directed staff to expand the scope of the discussion from the subset of Agricultural remaining portions to the greater scope of the entire Agricultural zone. The Work Group had split opinions on the subject.

Summary of Opinions Expressed:

1. Not for personal use, utility solar facilities, including community solar, only belong on Commercial- and Industrial-zoned properties and should not be permitted in the Agricultural zone.
2. Community solar facilities should be allowed in the Agricultural zone but be prohibited on those parcels that are remaining portions, as by definition they will be close to residential dwelling units.
3. Community solar facilities should be allowed on any Agricultural-zoned parcel, including remaining portions, if other defined applicability limitations are met.

Note: There was consensus that community solar facilities are not allowed on properties under an Agricultural Land Preservation Program easement, and no consideration should be made to try and amend code to allow them.

Staff Recommendation:

This is a fundamental decision to be made by the Board of County Commissioners. If the consensus of the Board is that community solar facilities should not be regulated by the County Code on Agricultural-zoned property, no further refinement is needed. In that case, staff will facilitate the process of removing §158.153(E) from the Code.

If the consensus of the Board is that community solar should be regulated by the County Code in the Agricultural zone, staff *recommends option 3 above*. It is possible that there are remaining portions that could meet all applicability requirements and not cause an adverse impact to the surrounding community. Therefore, a prohibition on remaining portions is not needed per option 2.

☀️ **Principal Permitted Use**

County Code identifies specific land uses and determines their allowance in the different zoning districts. Uses are categorized as "Principal Permitted," "Conditional," or "Prohibited." Currently, community solar facilities are a principal permitted use and are allowed by right. A conditional use is allowed following authorization for each specific site by the Board of Zoning Appeals (BZA).



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Per §158.133(G) of the County Code:

"The BZA shall study the specific property involved, as well as the neighborhood, and consider all testimony and data submitted. The application for a conditional use shall not be approved where the BZA finds the proposed use would adversely affect the public health, safety, security, morals, or general welfare, would result in dangerous traffic conditions, or would jeopardize the lives or property of people living in the neighborhood. In deciding such matters, the BZA shall give consideration, among other things, to the following:

- (1) *The number of people residing or working in the immediate area concerned;*
- (2) *The orderly growth of a community;*
- (3) *Traffic conditions and facilities;*
- (4) *The effect of the proposed use upon the peaceful enjoyment of people in their homes;*
- (5) *The conservation of property values;*
- (6) *The effect of odors, dust, gas, smoke, fumes, vibrations, glare, and noise upon the use of surrounding property values;*
- (7) *The most appropriate use of land and structures;*
- (8) *Public convenience and necessity;*
- (9) *Type and kind of structures in the vicinity where public gatherings may be held, such as schools, religious establishments, and the like;*
- (10) *Compatibility; and*
- (11) *The purpose of this chapter as set forth herein."*

The Work Group was split on the opinion whether community solar should be a principal permitted use or conditional use. One perspective was that having the additional step to have the BZA review the proposal and allow the community comment in a public meeting was beneficial to the process. The other perspective was that the site plan review process already has opportunities for public input and that the Planning and Zoning Commission could enforce additional requirements to meet community concerns.

Summary of Opinions Expressed:

1. Allow community solar in the Agricultural zone as a conditional use to allow for additional community input and another opportunity for conditions to be applied.
2. Allow community solar in the Agricultural zone as a principal permitted use, as the process already gives the Planning and Zoning Commission the authority to impose additional conditions.

Staff Recommendation:

Allowing additional community input into the process and having the BZA review the project prior to significant investment by the developer seems to be a reasonable step in the process. This would also align this use with other conditional uses in the Agricultural zone. Staff recommends *changing the use for community solar from Principal Permitted to Conditional.*

☀️ Minimum Parcel Size

There was consensus by the Work Group that the current minimum size of 5 acres is too small. It was discussed that a primary goal of the code should be the preservation of agricultural land. The



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allowance of a community solar facility on a parcel should be balanced by an appropriate amount of property put into conservation easement. There was not agreement on what the minimum size should be. Some opinions ranged from 50 acres to 100 acres as a minimum size. Others suggested that the 20-acre facility cover no more than a defined percentage of the parcel. Opinions differed regarding as to what that percentage should be. Some suggested 25% while others suggested 60%. In other words, a 20-acre solar facility would require at least a 34-acre parcel to be allowed if the percentage was 60%. It would require an 80-acre parcel if the percentage was 25%.

Summary of Opinions Expressed:

1. *Consensus* → Current minimum parcel size of 5 acres is too small.
2. Require a minimum parcel size of 50 acres.
3. Require a minimum parcel size of 100 acres.
4. Maximum of 60% of a parcel can be covered by solar facility site. (20-acre solar facility would require minimum parcel size of 34 acres.)
5. Maximum of 25% of a parcel can be covered by solar facility site. (20-acre solar facility would require minimum parcel size of 80 acres.)

Staff Recommendation:

Staff recommends a *minimum parcel size of 50 acres be required*, as this provides a significant balance to the solar development, but not such a burden to suppress development. It also creates more opportunity on an individual property to locate the facility away from existing residential uses.

For reference, the following are the parcel sizes of the proposed community solar facilities for which concept plans have been submitted to the Bureau of Development Review.

| Project Name | Parcel Size (Acres) |
|---|---------------------|
| Spring Valley Solar | 65.20 |
| Shafer Farm Community solar | 74.03 |
| Willets View Community solar | 67.39 |
| Chaberton Solar Sunshine Community solar | 125.16 |
| Nora Valley Community solar | 41.07 |
| 4000 Brown LLC Solar | 41.58 |
| Pleasant Valley Solar | 33.17 |

☀ *Maximum Project Size*

There was consensus by the Work Group that the maximum size of any community solar project facility, including panels and ancillary features, should be 20 acres. This maximum provides flexibility to find the most suitable and appropriate locations on a parcel for each of the components of the facility, including the landscaped buffer/screening and any access road needed.



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Summary of Opinions Expressed:

1. *Consensus* → The maximum size of any community solar project should be 20 acres.

Staff Recommendation:

Staff agrees with the Work Group that the maximum project size that includes the panels and all associated infrastructure be limited to 20 acres.

☀ *Maximum Energy Production*

When the current Code requirements were adopted, State law capped the energy generation for a community solar facility at 2 MW. Since that time, State law has changed, and community solar facilities are now capped at 5 MW. Projects currently are required by County Code to follow the 2 MW cap. Some members felt the 2 MW cap should be maintained to minimize their potential impact on the landscape, as well as to offer an additional measure to limit potential future expansion of these projects.

Several members of the work group agreed that the limitation of 2 MW for community solar should be removed from County Code, as this will limit future technology improvements. Stakeholder concern is not the energy production, but the physical impact to the parcel. In other words, the 20-acre limit on size is what matters. The amount of power that can be generated within that footprint should be allowed to increase as technology matures.

Summary of Opinions Expressed:

1. Remove the 2 MW cap on the energy generation for a community solar facility to accommodate future technology improvements.
2. Limit the energy generation capacity to 2 MW per property.

Staff Recommendation:

Staff recommends removing the limitation on the generation capacity. By eliminating the 2 MW provision in County Code, the industry will conform with State requirements, and the County will not have to revise the Code as technology and State law changes. The County can rely on our 20-acre site limitation to hold in check the physical size of projects.

☀ *Productive Soils*

Soil productivity is categorized and mapped by the Natural Resources Conservation Service (NRCS). Values range from 1 to 8 with 1 being the most productive and 8 being the least. Soils classified as 1 and 2 are considered the most productive.

There are no other uses in the County where soil class is a restriction or prohibition. The County does not prohibit a property owner from developing a residential subdivision on areas that are agriculturally productive soils or from developing other permitted uses, such as churches, contractor equipment storage yards, etc. on productive soils.



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Opinions were expressed that solar facilities should not be permitted on highly productive agricultural land. The Work Group had split opinions with some feeling that infrastructure should be prohibited from Class 1 and 2 soils and others feeling that it should not be a criterium.

Summary of Opinions Expressed:

1. Avoid Class 1 and 2 soils.
2. Productive soils not a criterium.

Staff Recommendation:

Soil class restrictions are not being applied to any other uses in the county. Community solar facilities are less destructive to the agricultural land in that, following decommissioning, the agricultural use of the property can be restored, unlike other development. State law provides for incentives and the recommended County code requires agrivoltaics (or agricultural co-location) for community solar projects. Therefore, agricultural use of the parcel where the solar panels are located is required. Restricting solar panels to less productive soils may make this requirement difficult to achieve.

It should also be noted that the Planning and Zoning Commission has the authority to review individual sites for various factors, such as productive soils, and guide the location of the development on the property. Therefore, *staff does not feel that the restriction of development on productive soils is justified.*

☀️ Proximity to Other Zoning Districts

Zoning is a legal mechanism that identifies the types of uses that are permitted in defined zones and the properties within those zones. For example, a property may be zoned Agricultural, but there a variety of uses, such as residential and certain types of commercial/industrial uses, that are allowed.

There was consensus in the Work Group that there is not a need to restrict community solar facilities on Agricultural zoned property based on adjacency to other zoning districts. The stakeholders' concern is the use of adjacent property, not what it is zoned.

Summary of Opinions Expressed:

1. *Consensus* → No need for restrictions related to the proximity of community solar facilities to other zoning districts.

Staff Recommendation:

Staff agrees that a *restriction is not necessary.*

☀️ Proximity to Other Residential Uses

The Work Group discussed if there should be a restriction on proximity to residential uses for community solar facilities. The existing use was felt to be more relevant than the adjacent zoning of a property.



Summary of Opinions Expressed:

1. No community solar facilities allowed on parcels contiguous to residentially used properties.
2. No restriction on use adjacent to residential properties.

Staff Recommendation:

To prohibit community solar development on any property that is contiguous to a residential property would essentially regulate the use out of existence. Most properties in the county are contiguous to a residential use. Staff feels that specific criteria for a separation requirement would adequately address this issue.

☀ Proximity to Environmental Features

There was consensus in the Work Group during discussions that there is not a need to restrict community solar facilities adjacent to environmental features, such as streams, as existing Federal, State, and County environmental codes and regulations mitigate the potential environmental impact. This includes compliance with stormwater management and runoff requirements that would address potential impacts to water quality.

Summary of Opinions Expressed:

1. *Consensus* → No need for further restrictions on community solar facilities related to impact on environmental features.

Staff Recommendation:

Staff agrees that a *restriction is not necessary*.

☀ Total Solar Facilities Countywide

Some members of the Work Group recommended that the County consider a cap on the amount of community solar production allowed to be developed. A cap based on the Agricultural zone would be one mechanism to limit the total acreage of community solar facilities that could be developed in the Zone to address concerns of potential proliferation of community solar facility development. Caps in the Agricultural zone could be established on various bases, such as a total acreage of community solar development in the Zone, on properties that meet the minimum criteria, or total energy generation by community solar facilities. These caps could be established as a percentage of acreage or as a total MW generated.

One recommendation was 1% of property that meets the development applicability. If the general applicability guideline of non-preserved agricultural parcels greater than 50 acres in size is used, this is estimated to be around 42,000 acres. A cap of 1% of properties that meet the applicability would be 420 acres. Another recommendation was 1,000 acres.

If a minimum parcel size of 50 acres is considered, currently, a total of 458 parcels (42,743 acres) would meet the minimum size applicability requirement. If each of these parcels developed community solar facilities to the full 20 acres allowable per parcel, a maximum of 9,160 acres of community solar facilities – including panels plus all associated infrastructure (landscaping, access



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road, inverter, fencing, etc.) – could be developed. The Work Group agreed that, based on suitability criteria, such as access to 3-phase distribution lines, this would be highly unlikely. While a cap was suggested, the majority of the Work Group agreed that the suitability of individual properties would be adequately self-limiting that a cap wouldn't be necessary.

Summary of Opinions Expressed:

1. Establish a community solar energy generation cap in the Agricultural zone of 1% of the properties that meet the general applicability.
2. Establish a community solar energy generation cap of 1,000 acres of Agriculturally zoned land.
3. Establish a community solar energy generation cap of 500 acres of Agriculturally zoned land.
4. A cap was not necessary due to other limitations the County could impose and the economic limitations of the industry.

Staff Recommendation:

Staff is not opposed to the idea. However, we question what the basis of the acreage cap would be. Also, it is felt that applying other strict applicability rules, and the economic limitations of where community solar can be placed, will self-limit the propagation of solar development in the county. Staff *recommends that a cap not be implemented.*

However, this issue could be addressed by the Board as time goes by and the actual demand for community solar facilities is observed. An arbitrary cap of 1,000 acres could be established now and then revised in the future if deemed appropriate. Or, no cap could be established now and one implemented in the future if the Board feels that development needs to be limited.

☀ Proximity of Solar Facilities to Each Other

The existing County Code is silent on the proximity of one community solar facility to another as State law previously prohibited community solar facilities from being on adjacent parcels. State law was revised with the passage of House Bill 908 by the Maryland General Assembly, which allows community solar facilities to be on adjacent parcels if the combined power generation is less than 5 MW.

The Work Group generally agreed during discussions that the State law is sufficient, and that the County Code does not need to be more restrictive if all other applicability restrictions are met. Implementation of the tracking and regulation of this type of information would be inefficient and difficult.

Summary of Opinions Expressed:

1. No need for further restrictions on community solar facilities on adjacent parcels.
2. No 2 community solar facilities located within 10 miles of each other.

Staff Recommendation:

Staff feels that *further restriction is not necessary.*



Existing Specific Requirements

If a proposed project meets the Applicability of the Code and can be constructed, there are then specific Code requirements that must be met. For reference, the following summarizes the existing requirements of §158.153(E) of the County Code:

- ⚙ Property Use – The primary use of the property shall continue to be agricultural in nature. Any commercial aspects of the community solar use shall not be used to warrant or justify future land use designations or rezoning petitions.
- ⚙ Conservation Easement – A conservation easement that permanently extinguishes non-agricultural development shall be placed on the portion of the property not used for community solar.
- ⚙ Site Plan – A site plan approved by the Planning and Zoning Commission is required for development.
- ⚙ Environmental Resources
 - Topsoil shall not be removed from the site.
 - Forested areas may not be cleared.
 - Solar facility may not be located within or impede stream buffers, floodplains, or wetlands.
- ⚙ Agriculture Co-Location (Agrivoltaics)
 - Site must meet Department of Natural Resources Solar Generation Facilities Pollinator-Friendly Designation program AND/OR
 - Planted, managed, and maintained for grazing of farm animals, apiaries, or crops.
 - Property owner is responsible to control and suppress noxious weeds and invasive plants.
- ⚙ Landscaped Buffer
 - Required to provide year-round screening of the CSEGS from residential uses on contiguous properties and public rights-of-way.
 - May incorporate plantings and/or berms that blend in with the natural landscape.
 - May be placed within the setback.
 - Any perimeter fencing must be inside the landscaped buffer.
- ⚙ Bulk & Height Requirements
 - Minimum setback = 40 feet from property line.
 - Maximum height = 15 feet above existing grade.
- ⚙ Infrastructure and Utilities – On-site utility lines shall be underground to the extent feasible.
- ⚙ Abandonment & Decommissioning
 - Decommissioning plan required.
 - Facility not in use for 180 consecutive days must be decommissioned.
 - Public works agreement with County is required along with bond/guaranty to ensure proper decommissioning funding.



Specific Site Requirements Discussed

The following are the individual, site-specific requirements discussed with the Work Group and the results of the discussions.

Conservation Easement

Under existing Code, a conservation easement on the remainder of the property not used for community solar development is required. The limitations of the conservation easement are based upon the same easement used by the County Agricultural Preservation Program. The primary purpose of this easement was to address concerns that the community solar facilities would be able to expand in the future. Protecting agriculture and agricultural land was a benefit as well. Although secondary, this benefit would also help the County to achieve its preservation goals for properties that might otherwise be subject to development.

Staff have heard from some property owners and some in the Work Group expressed that the requirement to put a conservation easement on the entirety of the property not used for solar is unfairly burdensome on large property owners. For example, a 50-acre property with 20 acres of solar would preserve 30 acres. A 150-acre property with 20 acres of solar would preserve 130 acres. One option presented was that a ratio 1.5 of solar to conservation easement be established. Therefore all 20-acre community solar facilities would be required to put 30 acres of property into easement.

The Work Group expressed many different opinions regarding the conservation easement requirement.

Summary of Opinions Expressed:

1. No easement requirement.
2. Put an easement on the balance of the parcel not used by the community solar facility.
3. Put an easement on the balance of the parcel not used by the community solar facility, but when the solar facility is decommissioned, the community solar facility area is also put under easement.
 - ◆ Note: This option would require discussion with the County Attorney about the process to enforce a future legal agreement.
4. Requirement for a minimum number of acres that need to be put into easement.
 - ◆ Note: This option may be taken care of with Applicability. For example, if Code is written to require parcels to be a minimum of 50 acres, and the maximum community solar site area is 20 acres, then a minimum of 30 acres of conservation easement would be created with each project.
5. Percent of the parcel should be put into easement.
 - ◆ Note: This option may be complex in implementation. The suggestion was that a minimum of 75% of the area not being used by the solar facility be put into easement. For example, given a 100-acre parcel and 20 acres used for solar, 75% of the remaining 80 acres would go into easement. This would put 60 acres into easement and leave 20 acres outside of the solar area for other allowable uses by the property owner.



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- 1.5 to 1 ratio of conservation easement acreage to amount of acreage for the solar facility. All 20-acre solar facilities would require 30 acres of conservation easement. Solar facilities that utilize less than 20-acres would be required to preserve 1.5 times the actual usage.

Staff Recommendation:

For clarity and efficiency of implementation, staff recommends *option 2* which would put the balance of the parcel not used for the solar facility into conservation easement.

☀ Agrivoltaics

House Bill 908, passed by the Maryland General Assembly this year has made some revisions to State Law regarding Community Solar. At the time of the Work Group meetings, it was thought that the new Bill required agrivoltaics for Community Solar projects. Therefore, there was not much discussion with the Work Group other than confirming that there was consensus that the DNR Pollinator-Friendly Designation for solar energy facilities met the requirement for agrivoltaics.

Since the Work Group meetings, it has been clarified that the Bill provides for incentives to include agrivoltaics with Community Solar projects but falls short of requiring it. The existing County Code requires agrivoltaics and the Work Group sounded like they were in favor of the concept. However, given the current understanding, further discussion may be necessary.

Staff Recommendation:

Staff recommend agricultural co-location, also known as agrivoltaics, for all Community Solar projects in the agricultural district.

☀ Maximum Height

There was consensus with the Work Group that a maximum height of the solar panels of 15 feet was suitable to ensure different plans to address agrivoltaics could be achieved. It was noted by members of the Work Group that the industry standard for maximum height where agrivoltaics are required is typically 10 to 12 feet. The comment was made by members of the Work Group that this dimension is important in the consideration of landscape screening.

Summary of Opinions Expressed:

1. *Consensus* → Maximum height of 15 feet is suitable.

Staff Recommendation:

Staff agrees with the Work Group that a *maximum height of 15 feet is appropriate.*

☀ Fencing

There was no question in the Work Group that fencing must meet industry standards for safety and security. Fencing is required by electrical/building code(s) enforced by the County. The industry standard for height is 7 feet. The Work Group discussed if the fence should be opaque to assist with visual screening. Members differed on opinion as to whether an opaque fence is aesthetically pleasing, depending on the type of fencing used. Game fencing, which is animal friendly, could be



used and would be more aesthetically pleasing but is not opaque. Members were not in favor of a chain link fence with inserts to make it opaque.

Summary of Opinions Expressed:

1. Require fencing to be opaque to assist with visual screening.
2. Prohibit fencing topped with barbed wire.
3. Use fencing that is aesthetically pleasing rather than “industrial” style.

Staff Recommendation:

Staff feels that an opaque fence will contribute to screening the solar facility, and the aesthetics of the fence itself will be masked by buffer landscaping. Therefore, staff *supports requiring the fence to be opaque*. Staff does not feel that the County should specify the specific method for how opacity is achieved. That allows flexibility of the developer to meet the requirement, but not be limited. Staff also agrees that *barbed wire should be prohibited*.

☀️ **Setback**

A setback is the distance from property boundary or public right-of-way to specified physical parts of the site, such as the solar panels or other structures. Landscape buffers and fencing may be located within the setback.

The County Code for solar development on Commercial zoned property requires a setback of 400 feet from adjacent Residential zoning and 200 feet from non-residential zoning. On Industrial zoned property, the setback is 200 feet for adjacent Residential zoning and 100 feet from non-residential zoning. Setback requirements for both the Commercial and Industrial zones may be reduced in half by the Planning and Zoning Commission if supplemental landscaping is proposed.

The Work Group agreed that the current code requirement for community solar development on Agricultural-zoned property of 40 feet was not sufficient. However, there was not consensus regarding what it should be.

Summary of Opinions Expressed:

1. 80-foot setback from property lines.
2. 100-foot setback from property lines.
3. 400-foot setback from property lines.

Staff Recommendation:

Staff recommends that the setback for community solar facilities on Agricultural zoned properties follow the same guidelines as for the Commercial zone. A setback of *400 feet from adjacent Residential zoning and 200 feet from adjacent non-residential zoning*. The Planning and Zoning Commission may authorize the reduction of those setbacks by up to 50% with agreed upon supplemental screening. It would be beneficial that, if a new landscape specification is developed specifically for community solar facilities, a “supplemental screening” option also be developed that would allow for the Planning and Zoning Commission to reduce the setback with a defined option. Following these guidelines, the lowest potential setback would be 100 feet, which is in line with much of the discussion with the Work Group. This 100-foot setback would only be for



property boundaries adjacent to non-residential zoning and only with permission from the Planning and Zoning Commission.

☀ Separation

For the purposes of the discussion of community solar, separation is defined as the distance from adjacent residential dwellings to specified physical parts of the site, such as the solar panels or other structures. There are many other uses in the Zoning code that must conform to separation requirements, but the current requirements for community solar facilities in the Agricultural zone do not include separate requirements. Those with opinions in the Work Group regarding separation ranged from 400 feet to 3,000 feet from existing adjacent residential dwellings.

Summary of Opinions Expressed:

1. 400-foot separation from adjacent residential dwellings.
2. 1,000-foot separation from adjacent residential dwellings.
3. 3,000-foot separation from adjacent residential dwellings.

Staff Recommendation:

§158.040 of the County Code addresses distance requirements. Distance requirements increase as active nuisances, such as noise, odor, and dust, are anticipated to be more impactful. Separation distances for various uses range from 300 feet to 1,500 feet depending on the active nuisance or safety concerns. The only uses that require 1,500 feet separation are airports and rubble fills.

The nuisance being discussed for community solar is a passive nuisance related to visual aesthetics. It is not possible for a separation distance requirement to fully mitigate the visual impact of a development. On some sites, development of any kind could be seen for miles from another location. In addition, the Planning and Zoning Commission has authority to review individual sites for various factors and guide site layout and design. Staff, therefore, recommends *that the base level of separation defined in the County Code of 300 feet from residential dwellings be implemented and that visual aesthetics be addressed through landscaping requirements.*

For an example of how setback and separation would work, consider the scenario where there is a residential neighborhood that was developed on an Agricultural property adjacent to a proposed community solar facility. The zoning of the residential use is Agricultural. So, the zoning is considered non-residential even though the use is residential. The recommended setback in this scenario is 200 feet, which would require the distance from the property line to the solar panels and any associated structures to be 200 feet. The recommended separation requirement of 300 feet would be from any existing adjacent house to the solar infrastructure. This could, therefore, potentially push the solar panels farther away from the property line than the minimum 200 feet.

For a scenario where an adjacent property is zoned Residential, the recommended setback is 400 feet. In this case, the recommended separation would not apply as the 400-foot setback is greater than the 300-foot separation.



☀ Landscaping and Screening

There was significant discussion related to landscaping and screening of the solar facilities. All agreed that effort should be expended by the solar developer to ensure the survivability of the planted material.

The Work Group also discussed if the landscaping needed to be adjacent to the solar panels on properties on sites where better screening could be achieved in another location on the property. An example where this might apply would be landscaping along the roadway where the community solar facility is located away from the road and at a different elevation than the roadway.

Summary of Opinions Expressed:

1. Landscaping berms
 - a. Should be required.
 - b. Should be prohibited due to the permanent impact to the agricultural land.
2. Landscaping trees
 - a. 5-6 feet at time of installation.
 - b. Use native species only.
 - c. 15 feet at time of installation to match the maximum height of the solar panels.
 - d. 2 feet above fence height at time of installation.
3. Minimum depth of landscaped area.
 - a. 15 feet.
 - b. 20 feet.
 - c. 50 feet.
 - d. 100 feet.
4. 80% to 100% opaque within 3 years.
5. Follow Class Double A landscaping requirements in Carroll County Landscape Manual, which is the densest screening for which the County has standards.
6. Plantings
 - a. To be inspected within 1 year, per existing County requirements, prior to landscape bond release.
 - b. To be inspected every six months by developer for 3 years, with County inspection at 3 years, prior to landscape bond release.

Staff Recommendation:

Current County landscape specifications are not suitable for the intended purpose of suitably screening the community solar facilities. Staff recommends that *landscape architecture expertise be consulted to develop a new landscape specification meeting the following requirements.*

- 20-foot minimum buffer depth with staggered spacing of trees.
- Primarily evergreen material to provide year-round screening.
- Mixture of deciduous trees and bushes in front of the evergreens to provide additional screening and biodiversity.
- 9 feet of screening height at initial installation through use of berm and/or evergreen trees.
- Documentation of developer inspection every 6 months for 3 years with certification indicating that landscaping is in compliance with site plan. Inspections should occur at the



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start of the growing season, March/April, and then again at the end of the growing season, September/October.

☀️ **Glare**

Members of the Work Group explained that all newer solar panels are designed to be anti-glare. Other sections of the County code related to solar facilities have the requirement that “Glare must be mitigated away from an adjoining property or adjacent road, which shall be certified by the solar installer prior to installation.” The Work Group agreed that adding this requirement to community solar would be sufficient to address the question of glare.

Summary of Opinions Expressed:

1. *Consensus* → Require glare to be mitigated away from an adjoining property or adjacent road and to be certified by the solar installer prior to installation.

Staff Recommendation:

Staff agrees with the Work Group that *adding the provision of glare being mitigated* should be included *in the Code* for community solar.

☀️ **Maintenance and Noxious Weeds**

Staff explained that requirements including maintenance of the facility and planting material that are not met during the life of the facility would be a violation of the site plan. A complaint issued to the Zoning Administrator would initiate an investigation. If the site is determined to be out of compliance, the Zoning Administrator has the legal right to take actions to compel the property owner to bring the site into compliance. The Work Group found this solution to be acceptable when discussed.

Summary of Opinions Expressed:

1. *Consensus* → Existing enforcement mechanism is acceptable.
2. Require a management/maintenance plan to be developed and submitted for review and approval with the site plan, including an audit by an independent, third-party certified engineer every 6 months.

Staff Recommendation:

Staff agrees with the Work Group that *no additional code requirements are necessary* as site compliance is addressed through other existing sections of the code.

Regarding the concept of a management/maintenance plan, there is no other use in Carroll County where this is required. Administration of this type of program would be burdensome for staff, and resolution of issues would bear the same outcome as current policy, which is responding to complaints.

☀️ **Decommissioning**

A solar facility may cease to generate energy for several reasons, the most common of which include end of facility life, end of contract, and maintenance/repairs. At that time, a process to



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“decommission” the facility is typically initiated. It is the solar company’s responsibility to notify the landowner if decommissioning is planned. As the holder of a bond for decommissioning, the County must be notified as well. If a facility is simply abandoned, the bond would be used to facilitate the decommissioning process. The length of time after energy generation ceases (and possibly the reason) before decommissioning must begin, as well as the length of time in which it must be completed were discussed by the Work Group.

To be prepared for the decommissioning process, a decommissioning plan is prepared and submitted as part of the legal document and bonding process for site plan development. The plan includes, among other things, the removal of all equipment (including all underground equipment), site restoration, and the associated costs. The bond amount is based on these costs. The preparation of and requirement for these plans is an industry standard and a common requirement in local codes and is often prepared by an independent, third-party, who can also certify the costs. The Work Group discussed the need to ensure that the bond amount is still appropriate as technology and costs change over the life of the facility. If the solar company does not initiate decommissioning in compliance with the requirements of the Code and the decommissioning plan, the bond would be used by the County to implement decommissioning. Otherwise, the bond would be returned to the solar company upon completion and certification of decommissioning according to the plan or with approved changes by the landowner.

Notification of decommissioning is generally included in the contract with the landowner.

The Work Group discussed disposal of the panels and other equipment. Federal, State, and local environmental laws, with which the solar company must comply, regulate the disposal of any hazardous materials.

Summary of Opinions Expressed:

1. *Consensus* → Site must be restored for agricultural use.
2. *Consensus* → The landowner should have the right to decide if any of the solar development site improvements should remain, such as access roads, landscaping, fencing, etc., and should be determined at the decommissioning stage.
3. Abandonment
 - a. Require notification of property owner.
 - b. Require notification to County.
 - c. Certify abandonment.
4. Decommissioning to Begin...
 - a. No later than 120 days after energy generation ceases.
 - b. No later than 180 days after energy generation ceases.
5. Decommissioning to Be Complete...
 - a. No later than 12 months after a facility is considered abandoned.
 - b. Within the timeframe determined by an independent, third party, on a site-specific basis.
6. *Consensus* → Decommissioning plan and costs should be reevaluated every 5 years.
7. Require proof of insurance to be submitted with the site plan and the Planning and Zoning Commission to be notified of any cancellation thereof within 30 days.



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8. Post decommissioning, an independent, third-party environmental consultant to monitor the site, at the solar company's expense, for 3 years to include groundwater, vegetative health, density and vigor, and overall landscape stability.

Staff Recommendation:

Staff agrees with the points on which the Work Group reached consensus, that the site must be restored for agricultural use; the landowner can allow features to remain; and that the decommissioning plan should be reviewed every 5 years to ensure that bonding requirements remain sufficient. This is common, solar industry practice.

Staff recommends the *decommissioning process* be required to *begin within 180 days of energy generation inactivity*. If the facility is not properly maintained in the meantime, the Zoning Administrator will investigate any complaints about the site, and enforcement for violation of the site plan can be pursued. Staff further recommends that *the timeframe for the decommissioning process be completed within 12 months*. It was agreed that 12 months was more than sufficient time to allow for a site to be decommissioned, but also allow for other unforeseeable factors such as weather.

Staff does not agree that insurance information needs to be provided to the County. There is no other use in the County where this is required and is part of the business contract between the property owner and the developer.

Staff does not agree that third party monitoring of the site for groundwater, vegetative health, etc. should be required. No other use has this type of requirement and defining the parameters for acceptable condition and mitigation requirements would be very difficult to define and enforce.

Members of the work group also presented thoughts on additional requirements for decommissioning of the solar facilities. The following are those recommendations. Staff appreciates the details and thoughts that went into these; however, this level of detail is not appropriate for code. This level of specificity is more appropriate in a guidance document so that items can be changed as situations and technology change without having to go through the formal process of code revision. Staff will certainly take these suggestions into consideration for decommissioning plans.

- The major owner of the community solar facility shall be responsible for the operation, abandonment, and decommissioning of the facility unless an alternate agreement is signed by the landowner.
- Prior to issuance of building permit, the operator shall provide bond, letter of credit, or other financial assurance in a form acceptable to the Planning and Zoning Commission to secure payment of 125% of the anticipated cost of removal of all associated improvements and restoration of site. Shall be reviewed every 5 years.
- Operator or landowner shall notify the Planning and Zoning Commission by certified mail regarding plans to decommission and proposed date of discontinued operation.
- Disconnect the solar project from the power grid.
- All utility owned equipment, conduits, structures, and foundations to depth of at least 3 feet below grade shall be removed.



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- Property restored to original condition, including the replacement of topsoil moved or eroded.
- All graveled areas, fences, and access roads shall be removed unless an alternative agreement is signed by the property owner.
- Revegetation of all cleared or damaged areas unless otherwise specified by signed agreement with landowner.
- Buffered areas, including planting of trees and shrubs shall be removed or remain in place, subject to preference of landowner.
- The major owner of the community solar facility shall be responsible for removal of all decommissioned structures, equipment, panels, waste, etc. from the property.
- Non-compliance with decommissioning plan will be subject to penalty.
- Upon completion, the site shall be inspected by a third-party professional engineer licensed in Carroll County with experience in decommissioning community solar facilities. No financial assurances shall be released until certification has been completed.

Solar Panel Materials

Members of the Work Group expressed concern about the solar panel materials, particularly any toxic or hazardous chemicals contained within the panels. According to the US Department of Energy, the most common semi-conductor materials are silicon (95% of panels), cadmium telluride (CdTe) (2nd most common), and copper indium gallium diselenide (CIGS). Solar panels may have different metals present in the semi-conductor or solder – most commonly cadmium or lead. If these metals are present in high enough levels in the solar panels, solar panel waste could be considered a hazardous waste under the Resource Conservation and Recovery Act (RCRA).

Some Work Group members expressed a desire to receive Material Data Safety Sheets indicating the materials that the solar panels are made from. The concern being what potential chemicals could leach from the panels.

Other members indicated that standards are in place for the manufacturing process. They need to be approved and certified before entering the market, including certification that they are properly sealed.

Members also discussed concerns with soil contamination and requiring soil testing as a means of identifying if hazardous materials leach from the solar panels. This included a concern related to the use of PFAS chemicals and a request that the solar developer certify that there are no PFAS chemicals in the panels or batteries.



Summary of Opinions Expressed:

1. Require a Material Data Safety Sheet to be submitted with the site plan to have on record with the Fire & EMS Department.
2. Require soil testing prior to community solar development to establish a baseline, along with testing at time of decommissioning to ensure soil integrity.
3. Panels must be free from PFAS, unless a containment plan is submitted for daily operation as well as decommissioning.

Staff Recommendation:

Requiring a Material Data Safety Sheet as part of the site plan process is not standard practice with other types of uses. If Fire & EMS services feel that having this information is necessary, they can require this information be submitted as part of their site plan review.

From a toxicity perspective and risk of solar panel materials to the environment and public health, the County does not have the resources to review and make these types of determinations. This is typically in the purview of the Federal and State government.

The EPA and the MDE recognize that certain industries have the potential for causing negative environmental impact. These industries then get regulated specifically at this level of government. As an example, the potential for water quality pollution is addressed through the Federal Clean Water Act and the issuance of Industrial National Pollutant Discharge Elimination System (NPDES) permits. In Maryland, these are known as 20-SW NPDES permits and are issued by MDE for a defined list of industrial uses. The list of those industries can be found here:

<https://mde.maryland.gov/programs/permits/WaterManagementPermits/Documents/GDP%20Stormwater/20SW/20SW-Final-AppendixA.pdf>

Solar facilities are not included in this list of regulated industries. Staff does not feel that local regulations are needed as the need has not been established by the EPA, which has the resources available to make these determinations.

Requiring soil testing before installation and after decommissioning is not something done for any other use in the County. Staff has reached out to other jurisdictions in the State and has not found any other jurisdiction making that type of requirement for solar or any other use. Determining testing parameters, mitigation requirements, and determining responsibility would be problematic to implement.

This includes PFAS chemicals. There are thousands of different PFAS chemicals, and the industry is ever evolving. Carroll County does not have the expertise to implement proactive efforts to address the complexities of these chemicals. That is the role of the Federal and State government who have the resources to establish these types of requirements. Staff does *not recommend requiring testing or require material documentation beyond what may be requested by Fire/EMS.*



☀️ **Lighting**

Some members of the Work Group expressed concern over lighting that might “spill” onto surrounding properties. Most community solar facilities do not have lighting associated with them, other than possibly a “porch light” by the door on a small associated building. Any proposed exterior lighting must be shown on site plans and is evaluated to ensure lighting does not “bleed” over to surrounding properties.

Summary of Opinions Expressed:

1. *Consensus* → No additional restrictions needed.

Staff Recommendation:

Staff agrees with the Work Group that *no additional code requirements are necessary* as there is very little, if any lighting associated with this type of facility, and any lighting would be addressed through the site plan review and approval process.

☀️ **Signage**

Signage with minimum emergency contact information is generally posted at the facility. Some members desired to ensure that both the solar company and landowner could be contacted should there be any issues.

Summary of Opinions Expressed:

1. Require signage with contact info for solar company in event there is an issue.
2. Require signage with contact info for landowner for issues that wouldn't go directly to solar company.
3. Signage must include warnings regarding the danger of climbing the fence or trying to enter the enclosure.

Staff Recommendation:

Staff feels that excess signage would be aesthetically problematic as the signage must be visible, but at the same time the desire is to screen the facility. In review of other jurisdiction codes, the intent is typically to limit the signage to just that required by law. Staff *recommends that additional signage be limited to one sign no larger than six square feet to identify the facility operator, contact information, and emergency contact information.*

☀️ **Viewshed**

The Work Group discussed the issue of viewsheds as they relate to historic districts and properties, as well as Maryland designated Scenic Byways. This requirement already exists in the Code for historic districts. Maryland State Highway Administration has responsibility to review plans that impact State highways. Some members also raised the idea of a visual impact analysis that would be completed, following interviews with adjacent residents or any property owners within view, that would elicit their opinions and be signed and submitted with the site plan.



Summary of Opinions Expressed:

1. Don't allow solar within certain distance of historic landmarks.
2. Don't allow within viewshed of State-designated Scenic Byways or within 1 mile of a Scenic Byway.
3. Require a visual impact analysis.
4. Require the developer to interview all adjacent property owners to discuss visual impact. Forms must be signed and provided as part of the development process.

Staff Recommendation:

County code for solar facilities on Commercial and Industrial properties has the requirement that "The system cannot unreasonably interfere with the view of, or from, a site of significant public interest (scenic road, historic resources, and the like)." Staff recommends that *this language apply to community solar projects*.

Regarding a *visual impact analysis*, the Planning and Zoning Commission can request this type of analysis on a case-by-case basis. Staff *does not recommend making this a requirement of code* as it would then require developers to perform the analysis even if there is no justification for it.

Staff feels that requiring a developer to meet with individual property owners and receive sign off on the visual impact of a property prior to development is not a realistic expectation. Staff certainly supports the developer taking the initiative to work with a community regarding any type of project. The County process has several steps that require public meetings where neighbors can discuss projects with the developer and the approval agencies. Staff feel that the *current process is sufficient*, and that this additional requirement would be burdensome and prohibitively difficult to achieve.

☀ Definitions

The Work Group discussed definitions and agreed early on not to discuss definitions at this time. Once actual proposed code is drafted, that would be an appropriate time to identify the terms that are included that might need further definition.

Summary of Opinions Expressed:

1. *Consensus* → Identify after proposed code is drafted.

Staff Recommendation:

Staff *agrees with the Work Group*.

Other Topics Discussed

The Work Group discussed some issues that do not fit under the Applicability or Specific Site Requirements categories. A few of these issues related to points made by Commissioner Vigliotti, and others were raised by Work Group members.



☀️ **Grandfathering of Projects Already Submitted for Review**

The Board of County Commissioners has the authority to decide what happens with solar projects that are already in the Development Review process. Grandfathering options generally include:

- Allowing projects to proceed, subject to the requirements in place when they were submitted,
- Allowing projects to proceed, but subject to the new requirements adopted, or
- Allowing projects to proceed only if they can comply with the new requirements.

The Work Group members *did not agree on a suggested course of action.*

☀️ **Construction Process Standards**

The Work Group discussed this topic but *agreed that processes are already in place* for staff review of development plans for conformance with State and local requirements. This includes State, federal, and local environmental codes in place to address environmental impacts, as well as building and construction codes in place to address safety and how equipment is constructed. For example, all site development plans must conform with Chapter 151 – Stormwater Management and Chapter 152 – Grading and Sediment Control.

☀️ **Fire/First Responders**

All site plans are reviewed and approved by the County Emergency Services Specialist. Any special requirements related to the solar panels will be identified and required as part of this review. In general, first responders are trained to respond to solar facility fires and emergencies. *The Work Group agreed that no action is needed.*

☀️ **Contract Renewal**

This is a private agreement between the property owner and the solar company. The County is not and cannot be party to the agreement/contract. This requirement is not applied to any other commercial or industrial uses in any zones. *The Work Group agreed that no action is needed.*

☀️ **Tax Rate**

Staff explained that property taxes are based on the actual use of a property (not zoning). If a commercial use occupies an agricultural property, that portion of the property will be assessed based on that use. The assessments and uses are determined by the State Department of Assessments and Taxation. *No action needed.*

☀️ **Solar Panels Flush with Ground**

Staff shared that a plan was submitted that proposed solar panels that would be flush with the ground, not mounted on posts. Staff will *investigate if agrivoltaic requirements could be met* with a system that would not support agricultural uses or pollinator-friendly plantings under the panels.



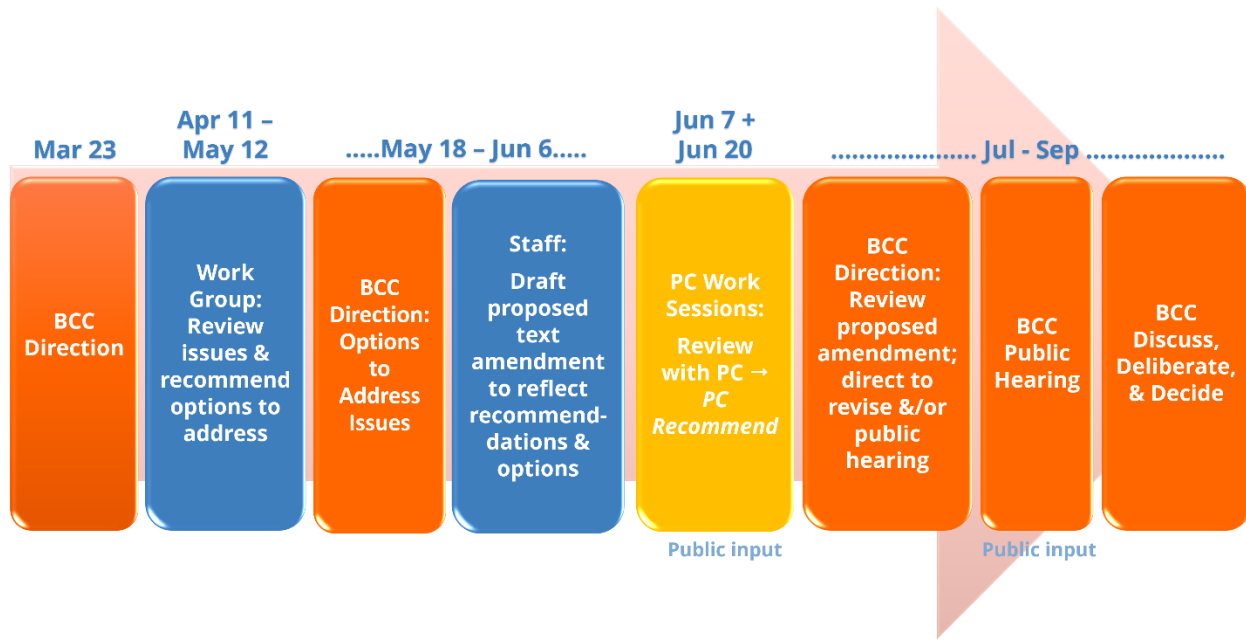
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☀️ Evaluation of Code Requirements in Future

The Work Group suggested that a *period of time be defined after which the new Code requirements be evaluated again* to ensure that they are producing the desired results. The reevaluation could occur *after a certain number of community solar facilities have been installed* to evaluate actual, on-the-ground results. Staff does *not feel that documenting a requirement to reevaluate the code is necessary* in the code as the Commissioners have the ability to re-open the code at any time if there are issues to be addressed.

Next Steps

A work session will be scheduled with the Board to discuss the Work Group report and opinions. The Work Group will be invited to the work sessions. Staff will seek direction from the Board regarding requirements for community solar facilities in the Agricultural zone.



After receiving direction from the Board, staff will draft proposed code for review with and recommendation by the Planning and Zoning Commission. The recommendation will go back before the Board for review, and the Board will determine how to proceed.