

St. Mary's County Solar Task Force – Final Report

Prepared for: Commissioners of St. Mary's County, Maryland



June 21, 2021

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**ST. MARY'S COUNTY GOVERNMENT
DEPARTMENT OF LAND USE
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COUNTY COMMISSIONERS OF ST. MARY'S:

James R. Guy, President
Eric Colvin, Commissioner
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Todd B. Morgan, Commissioner
John E. O'Connor, Commissioner

Dear Commissioner Guy:

This report is respectfully submitted to the Commissioners of St. Mary's County (Commissioners) by the St. Mary's County Solar Task Force (Task Force). At the request of the Commissioners, the Task Force has studied how to best encourage solar development in St. Mary's County (County) while protecting the County's key economic drivers and cultural and environmental heritage.

Solar energy holds great promise and offers numerous benefits to the citizens of Maryland, but encouraging and implementing new solar technologies poses new challenges. Understanding both the benefits and challenges posed by new solar development should be carefully weighed when creating land use and other zoning policies. To assist new solar development in the County, the Task Force considered general principles to help guide future solar development while providing more specific recommendations for land use and policies designed to promote responsible development across all types of solar projects in the County.

The Task Force wishes to thank all the state and county officials and employees who participated in the work of the Task Force, as well as those members of the agriculture, fire safety, military and public utility communities who provided guidance and advice to the Task Force. Your assistance and help are greatly appreciated.

The Task Force sincerely hopes that the citizens of St. Mary's County, the Commissioners and other County officials find the Task Force recommendations helpful.

Respectfully,

Dr. Michael Cain, Chair, (Education Representative)
Bonnie Kelnberger, (Community Representative)
Jeffrey Shaw, (Utility Representative)
Bryan Thomas, Sr. (Agriculture Representative)
George "Mike" Thompson (Community Representative)

LIST OF ABBREVIATIONS

CARES	Clean and Renewable Energy Standard
Commissioners	Commissioners of St. Mary's County
Conservancy	Chesapeake Conservancy Conservation Innovation Center
Consultant	Consultant to the Task Force – Leslie Knapp, Jr.
County	St. Mary's County
CPCN	Certificate of Public Convenience and Necessity
EMI	Electromagnetic Interference
GIS	Geographic Information System
GWh/yr	Gigawatt Hours/Year
MACo	Maryland Association of Counties
MW	Megawatt
PILOT	Payment in Lieu of Taxes
PPRP	Powerplant Research Program
PSC	Maryland Public Service Commission
SDAT	State Department of Assessments and Taxation
SMECO	Southern Maryland Electric Cooperative
State	State of Maryland Government
Task Force	St. Mary's County Solar Task Force



EXECUTIVE SUMMARY

The State of Maryland government (State) has set ambitious goals for the adoption of solar energy within the state and the growth of photovoltaic solar is expected to have a significant impact on counties and municipalities.¹ Solar energy holds the promise of helping to reduce harmful greenhouse gas emissions while providing economic development benefits to both the state and St. Mary's County (County).

The siting of solar energy in the County presents both challenges and opportunities to ensure that St. Mary's citizens enjoy increased benefits associated with new solar deployments within its jurisdiction. For these reasons, the County intends to prepare for solar development to balance the needs of property owners and solar developers. To achieve these benefits, the St. Mary's County Solar Task Force (Task Force) has carefully considered how zoning, permitting, and other regulations can equitably address new solar development while protecting existing economic drivers in the County.

The Task Force report addresses key solar concepts, including accessory use; net metering; and the different categories of solar projects, ranging from several panels on a residential rooftop to utility-scale projects that can cover hundreds of acres. The report also describes the State's role in approval of utility-scale solar projects and its ability to preempt local zoning decisions in this area.

To prepare this report, the Task Force reviewed a wide variety of solar policies in other counties of Maryland and several other states. Special focus was given to the agricultural, military, and public utility impacts of solar projects, particularly utility-scale projects. Among the many concerns of the Task Force, the recommendations provided below were formulated to minimize the risk of state preemption and thereby offer feasible recommendations of use to the citizens of St. Mary's and its government. The Task Force hopes this report is useful to the Commissioners of St. Mary's County (Commissioners) and the County as they move forward with developing solar zoning ordinances and regulations.

The Task Force created seven Principles – broad policy goals which guided our specific Recommendations. The Recommendations created by the Task Force are divided into five categories based on the different types of solar projects.

GENERAL

The Task Force has two general recommendations, including using the Chesapeake Conservancy Conservation Innovation Center (Conservancy) report to assist the development of the County's solar zoning polices and enacting a moratorium of no more than one year on utility-scale solar projects.

RESIDENTIAL ACCESSORY USE SOLAR

The Task Force has seven recommendations for residential accessory use solar, including a definition, changes to rooftop setbacks to allow the use of solar panels on smaller homes and affordable or low-income housing, highlighting the availability of existing residential solar assistance programs, and the creation of local incentives for residential accessory use solar.

COMMERCIAL/INDUSTRIAL/INSTITUTIONAL ACCESSORY USE SOLAR

The Task Force has five recommendations for commercial/industrial/institutional accessory use solar, including a definition, setback and height requirements, and a survey of County properties where institutional solar may be appropriate.

COMMUNITY SOLAR

The Task Force has 11 recommendations for community solar projects, developed on the assumption that community solar may become available in the County. The recommendations include a definition, zoning and application requirements, setback requirements, buffer requirements, decommissioning requirements, and potential incentives.

UTILITY-SCALE SOLAR

The Task Force has 12 recommendations for utility-scale solar projects, including a definition, developer notification and communication requirements, developer consultation with the United State Navy, zoning and application requirements, setback requirements, buffer requirements, decommissioning requirements, and potential incentives.

THE TASK FORCE

The Task Force was formed by the Commissioners on January 28, 2020, after hearing about solar development concerns from County residents.² Initially, the Task Force was scheduled to run for six months but received a six-month extension by the Commissioners after the Task Force stated that it would need more time to properly study and evaluate solar issues.

The Task Force consisted of five representatives, including one education representative, one agricultural representative, one utility representative, and two community representatives. The appointed members included: (1) Dr. Michael Cain, who chaired the Task Force; (2) Bonnie Kelnberger; (3) Jeffrey Shaw; (4) Bryan Thomas, Sr.; and (5) George “Mike” Thompson. The Task Force was primarily staffed by four County employees: Harry Knight, Sandie Greene, ALisa Casas, and Amy Carter.

The Task Force also contracted with two outside entities to assist in its activities. Consultant Leslie Knapp, Jr. (Consultant) was hired to provide general research and guidance. The Conservancy was hired to produce a study on optimal solar siting conditions in the County.

The Task Force met 15 times between June 10, 2020 and June 21, 2021. Most meetings were conducted at least in part virtually due to the ongoing COVID-19 pandemic. During its deliberations, the Task Force consulted with a variety of stakeholders, including the United States Navy, the agricultural community, state and local fire service representatives, the Southern Maryland Electric Cooperative (SMECO), the County’s Department of Land Use and Growth Management, and other County government agencies. For a full list of the Task Force’s guest speakers, see **Appendix 1**.

The Task Force also reviewed Maryland laws and regulations related to solar energy and the solar zoning ordinances and permitting requirements of various Maryland counties.³ General solar policies of several other states were also examined.

Videos of each Task Force meeting can be found on YouTube.⁴ Additionally, the meeting agendas, and minutes for each Task Force meeting can be found on the St. Mary’s County government website.⁵

THE CONTEXT FOR SOLAR SITING

The Task Force believes that solar energy development can be a net benefit to the County with the adoption of land use policies that maximize the strengths of solar energy and mitigate its challenges. (See **Appendix 2** for a discussion of key solar concepts such as net metering and **Appendix 3** for a discussion of the benefits and challenges of solar energy development.)

Maryland has set ambitious renewable energy and climate change goals and enacted a portfolio of laws and policies to meet these goals. This section addresses the broader context for solar project development in Maryland, including key State actors, how State laws apply to different types of solar projects, and potential limits on local authority. The Task Force carefully considered this context and suggests the County be cognizant of existing State goals and energy laws when developing its own solar land use and regulatory policies.

State Goals for Solar Energy and Climate Change

Maryland has committed to increasing its solar “footprint” in order to increase renewable energy use in the state and combat climate change. The State’s goals can be found in both statute and executive policy.

- **Renewable Energy Goal:** The Clean Energy Jobs Act of 2019 requires the state to generate 50 percent of its energy through renewable sources, including solar, by 2030.⁶ While most of this energy can be generated inside or outside of the state, the Act provides a special 14.5 percent “carve out” for solar energy, which must be generated in-state. (Locally, SMECO generates roughly 2.5 percent of its energy through solar power.)

- Clean Electricity Goal: Maryland Governor Larry Hogan has adopted the Clean and Renewable Energy Standard (CARES) as a policy goal.⁷ CARES calls for 100 percent clean electricity usage by the state by 2040. This includes various zero-carbon and low-carbon energy sources, such as solar, wind and nuclear, as well as looking at carbon capture and storage and combined heat and power.
- Climate Change Goal: The Greenhouse Gas Reduction Act of 2016 requires the State to reduce its greenhouse gas emissions by 40 percent of its 2006 levels by 2030 and consider how to achieve an “aspirational goal” of 80 to 95 percent reductions by 2050.⁸ As the two largest greenhouse gas emitters in the state are energy generation and transportation, this requirement will further drive solar energy adoption.

It is likely the State will seek to further increase its renewable energy and climate change goals in the near future.⁹

The Role of the State in Solar Siting

The State plays a major role in the approval of utility-scale solar projects through the Certificate of Public Convenience and Necessity (CPCN) process under the Maryland Public Service Commission (PSC). For community solar projects, entities wishing to become subscriber organizations must receive approval from the PSC. Solar projects must also comply with all applicable state laws and regulations, just like any other kind of development project.

The following are key state stakeholders to be aware of as County begins its solar siting deliberations:

- PSC and PPRP: The PSC oversees and conducts the CPCN process for utility-scale solar projects.¹⁰ The Powerplant Research Program (PPRP) provides technical and research support to the PSC. Further information on the CPCN process and the role of the PSC and PPRP can be found in **Appendix 4**.
- Maryland General Assembly: The Maryland General Assembly has taken a major interest in passing new solar legislation in recent years. Beyond establishing renewable energy and climate change goals, the General Assembly has considered legislation both beneficial and harmful to local governments with respect to solar siting. The General Assembly will very likely continue to take up solar issues in future Sessions and the County should be watchful for any new legislation.
- Governor’s Task Force on Renewable Energy and Siting: Created in 2019 by Maryland Governor Larry Hogan through Executive Order, the Governor’s Task Force was required to study and make consensus-based recommendations on the siting of clean and renewable energy projects, including how to accelerate and streamline the siting of projects in desired areas, such as developed lands, brownfields, and parking lots, while

minimizing the impact of projects sited in less-desired areas, such as agriculturally, ecologically, or culturally important lands.¹¹

The recommendations must recognize and respect local government legal authority and private property rights. The Governor’s Task Force issued an interim report in December 2019, and a final report in August 2020.¹²

In its final report, the Governor’s Task Force submitted 14 recommendations, including developing additional incentive programs, updating and streamlining the CPCN process, expanding rooftop solar by increasing the Net Energy Metering Cap, accelerating residential rooftop solar permitting, evaluating new and existing State and local government facilities and land for solar potential, and addressing transmission and distribution constraints.

Local Preemption under the *Perennial* Decision

In the 2019 *Perennial* decision, the Maryland Court of Appeals held that the PSC had implied preemption over local zoning and land use requirements regarding the siting of utility-scale solar facilities and other energy generation facilities that require a CPCN.¹³

While this case gives the PSC the final say on siting energy generation facilities that need a CPCN, the Consultant believes the holding does not eliminate the important role of local zoning in the CPCN process. The decision does not change the CPCN or PSC decision-making process (which traditionally has given great deference to local concerns) or expand the scope of the CPCN or PSC. The decision also does not appear to apply to local construction and building requirements.

A local government may still challenge a PSC decision by alleging the PSC did not follow its own process or violated other statutory or regulatory requirements. However, the Consultant also believes that rational and clear land use and zoning policies for utility-scale solar development that produces viable project sites decreases the risk of preemption by the PSC.

The Role of Local Governments in Utility-scale Solar Siting

Despite the *Perennial* holding, local governments can still play a major role in the siting of utility-scale solar facilities. Local governments can be part of the CPCN process in the following ways:

- **Due Consideration of Position, Consistency, and Mitigating Actions:** Section 207(e) of the Public Utilities Article requires the PSC to give “due consideration” to the
 - (1) Position of the local government on a proposed energy generation project within their jurisdiction;
 - (2) Consistency of a proposed energy generation project with the local government’s comprehensive plan and zoning; and

(3) Any actions taken to address concerns raised by the local government over the proposed energy generation project.¹⁴

- Joint Public Hearing: A local government can host a joint public hearing with a PSC administrative law judge over the proposed energy generation project within their jurisdiction. The hearing allows for public input.
- Intervention in a PSC Case: A local government has the right to intervene as a party to a case in the PSC docket. This allows a local government to offer formal testimony on the matter.
- Comments to PSC: A local government may also submit comments to the PSC at their administrative meetings.
- Pre-Application Consultation Requirement (*pending*): The PSC held a rulemaking hearing on March 29-30, 2021 and voted to move forward with new regulations creating a pre-application consultation requirement for generating stations subject to the CPCN process, including utility-scale solar plants. Under the proposed regulations, at least 90 days prior to filing a CPCN application, an applicant must submit certain information about the project to each local government where the project will be located.

The local government is then requested to provide a preliminary report on the project's consistency with the local comprehensive plan and zoning and any suggestions for improving or modifying the application prior to submission.

The proposed regulations are currently in the State's formal drafting and review process.

SOLAR PROJECT CATEGORIES

Solar energy projects come in a wide variety of types and sizes, ranging from a couple of panels on a residential rooftop for personal use to commercial utility-scale projects located on hundreds of acres. Due to the varying needs and characteristics of different types of solar projects, the Task Force believes the County should consider different land use and regulatory approaches based on a project's type.

Accordingly, the Task Force has classified solar projects into four broad categories and made its specific Recommendations based on the unique characteristics of each category.

1. Residential Accessory Use Solar: Residential Accessory Use Solar projects are installed at private residences. All or almost all of the power generated is used on-site. The solar

panels are typically installed on the home's rooftop, although pole mounts, ground mounts, or canopies can also be used. Residential Accessory Use Solar is subject to local zoning and permitting requirements and projects do not have to go through the CPCN review process by the PSC.

2. Commercial/Industrial/Institutional Accessory Use Solar: Similar to Residential Accessory Use Solar, except the panels are installed at commercial businesses, industrial sites, or government or institutional facilities. All or almost all of the power generated is used on-site. These are typically installed on rooftops, pole mounts, ground mounts, or canopies. Commercial/Industrial/Institutional Accessory Use Solar is subject to local zoning and permitting requirements and projects do not have to go through the CPCN review process by the PSC.
3. Community Solar: Maryland has established a pilot program that sets forth specific requirements and limits for community solar.¹⁵ Community solar projects are small-scale projects of 2 megawatts (MW) or less that provide energy to two or more electricity customers within a utility's service territory. They are operated by a subscriber organization (which can be a utility, retail electricity supplier, solar developer, local government, nonprofit organization, *etc.*). Residences and businesses within a community solar project's service area can purchase subscriptions to electricity generated by the project.

The state's current community solar pilot program establishes an aggregate cap of about 418 MW of community solar projects allowed in the state. Community solar is subject to local zoning and permitting requirements and projects do not have to go through the CPCN review process by the PSC. However, an entity seeking to become a subscriber organization must receive a separate PSC approval to participate in the pilot program.¹⁶

4. Utility-scale Solar: Utility-scale solar projects are large projects (greater than 2 MW) that serve as primary energy generators, similar to traditional power plants. The solar panels are typically ground mounted and can range in size from tens of acres to thousands of acres. These projects require: (1) land with good solar exposure; (2) proximity to high-voltage transmission lines (typically one to two miles); and (3) permission from the regional transmission organization PJM to use grid injection capacity at the project site.¹⁷

Utility-scale solar projects do have to go through the CPCN review process by the PSC. The projects are nominally subject to local zoning and permitting requirements, but the PSC can preempt the zoning and certain local land use requirements.

PRINCIPLES

The Task Force offers the following Principles to the Commissioners for consideration. These Principles are broad goals that are intended to inform decisions made by the County with respect to the zoning, permitting, or taxation of solar energy generation facilities. The Task Force used these Principles when developing the specific Recommendations contained in this report.

1. Improve Quality of Life: Solar energy development should be encouraged in a manner that enhances the quality of life for county residents while balancing the rights of affected property owners. Solar energy development should also be linked to environmentally sustainable county government operations.
2. Protect and Promote Economic Development: Solar energy development should be implemented in a manner that protects traditional County economic drivers, including agricultural operations on prime farmland and their supporting industries, military and military contractor operations, and tourism.
3. Protect Important Environmental and Historic Lands: Wherever possible, solar energy development should be focused in the existing built environment, including brownfield and gray field sites. Community and utility-scale solar development should be minimized on environmentally sensitive lands and lands of cultural or historical importance.
4. Encourage Smart Solar Development: The County should develop processes that encourage solar development and protect the interests of residents, farmers, property owners, and solar energy developers. Zoning and regulatory restrictions for solar energy development should be narrowly focused to address the valid environmental and economic development concerns of the County.
5. Reduce Air and Water Pollution and Climate Change: As a sustainable form of energy generation, the smart deployment of solar energy in the County will aid the County's efforts in reducing the negative effects of air and water pollution generated by fossil fuels and climate change.
6. Promote Clear and Transparent Processes: Any solar zoning and permitting processes or requirements should be well-defined and part of a transparent process that can be understood by residents, property owners, and solar energy developers. The processes should encourage open communication between the developers, County, and affected residents.

7. Encourage Equity: The County should encourage solar energy access (especially through residential accessory use and community projects) to economically disadvantaged communities within its jurisdiction.

RECOMMENDATIONS

The Task Force offers the following Recommendations to the Commissioners for their consideration. Recommendations are specific zoning, permitting, and other policies that were developed based on the seven Principles previously outlined in this report. The Recommendations envision the development of a mix of different categories of solar projects.

GENERAL

1. Incorporation of Conservancy Report: **The Task Force recommends identifying sites in St. Mary's County that are most appropriate for solar development. The Task Force has hired the Chesapeake Conservancy to undertake a survey of potential sites to identify different kinds of solar development and assess the different kinds of solar potential in the county. The Task Force recommends the County integrate the survey's findings into the County's planning and zoning process for future solar energy development.**

The Task Force believes that the Conservancy report provides useful information and criteria to help determine areas available for different kinds of solar development in the County, including preferred areas for utility-scale projects. The Task Force incorporated the Conservancy report's mapping data and some of its findings throughout the Recommendations and urges the County to do the same. For further information about the Conservancy report, see **Appendix 5**.

2. Utility-scale Solar Moratorium: **The Task Force recommends a temporary moratorium on reviewing and approving new utility-scale solar projects (over 2 MW in size) pending the passage of new zoning and regulatory requirements for St. Mary's County. The moratorium should last for no more than one year after the County begins its zoning update process and the moratorium should not apply to projects that have already begun the siting process from the date the County begins its zoning update process.**

The Task Force believes that a moratorium on utility-scale solar projects is appropriate in order to give the Commissioners and the County time to develop thoughtful zoning and land use policies. Properly incorporating viable utility-scale solar sites into the County's physical landscape and electrical grid infrastructure is both complex and challenging.

However, the moratorium should be for as short of a time as possible, and no longer than a year in any case. The County should have a clear plan for completing its zoning and land use work within the moratorium's time frame. The lack of a defined plan or extension of the moratorium could increase the risk of preemption by the PSC.

RESIDENTIAL ACCESSORY USE SOLAR

- 1. Definition: "Residential accessory solar energy generating facility" means an energy generating facility that:**
 - a. uses energy from the sun to produce electricity for on-site use as an accessory to the principal residential use; and**
 - b. may provide excess energy that is not immediately utilized on-site or temporarily stored for future use on-site to a utility company that provides electrical service to the property where the residential accessory solar energy generating facility is located in exchange for a credit or other compensation as determined by the utility company."**

This definition of residential accessory use solar was developed after review of other county ordinances, particularly Anne Arundel County, and consultation with the County's Department of Land Use and Growth Management.¹⁸

- 2. Rooftop Setbacks: The Task Force recommends that the County amend its adopted version of the International Residential Code (IRC) from the International Code Council (for occupied residential buildings to allow a 3-foot minimum setback on one side of a rooftop ridge (front or back) and at least two 3-foot minimum wide clear access paths to the ridge (front or back). This language allows greater flexibility for installing rooftop solar panels on residences while still providing safe roof access to firefighters and emergency services personnel.**

One challenge to the adoption of residential accessory use solar is the roof setback requirements in the County building code. The code's setbacks are arguably overly conservative and restrict roof mounted solar systems from being used on smaller homes, including affordable housing. This can make solar installations on smaller homes financially less attractive.

Currently, the building code requires a 3-foot minimum setback all around the roof and ridge.¹⁹ While easy to administer, the Task Force was concerned that this standard was unnecessarily restrictive. Consequently, the Task Force explored how to make the setback requirements more flexible for solar panel installation while preserving necessary fire safety protections. The Task Force believes its recommendation provides

a standard that can allow a greater range of houses to consider solar panels while maintaining fire safety.

In developing this recommendation, the Task Force consulted with the Office of the State Fire Marshal and members of the County's Volunteer Fire Service.

- 3. Additional Permits: The Task Force does not believe any additional permits, beyond those currently required for construction, electrical work, and inspections should be required.**

This recommendation mirrors the current practices of other Maryland counties reviewed by the Task Force.

- 4. Homeowner Association Restrictions & Education: The County should identify and remove any current statutory impediments to residential accessory solar posed by homeowner association covenants or similar community agreements. Homeowner education about existing rights under State law regarding residential accessory solar systems could be undertaken where appropriate.**

State law currently prohibits homeowner association covenants, similar community agreements, or deed restrictions from limiting the use of solar panels on residences (with an exception for historic properties).²⁰ The County should ensure that no communities are currently in violation of this law by reaching out to homeowner associations.

Additionally, the County can educate homeowners about their solar rights through various outreach methods such as notices, emails, and on the County website. Such outreach efforts can be done at minimal cost if done through already established delivery mechanisms.

- 5. Residential Solar Assistance Programs: The County should gather information on existing County, state, and federal benefits and assistance programs for residential accessory use solar and provide this information to residents via the County's website. This can be done through simply collating existing resources on various websites.**

Residential accessory use solar has the advantages of being incorporated into the built environment, as opposed to consuming open space or farmland, and requiring minimal grid infrastructure upgrades as all or most of the generated electricity is used directly onsite. As such, the Task Force believes residential accessory use solar should be encouraged to the extent practicable.

One simple and cost-effective way to encourage residential accessory use solar is to index existing assistance programs and resources for county residents on the County's website.

6. **Incentives: The Task Force recommends that the Commissioners consider whether any County assistance, such as a future property tax credit, is warranted to further the adoption of residential accessory solar in the County.**

As noted in **Residential Accessory Use Solar Recommendation 5**, the adoption of residential accessory use solar provides many benefits and the Task Force believes it should be incentivized by the County. This can be achieved by a property tax credit or some other form of assistance. Many local governments throughout the United States offer capped credit programs for residential solar. The Commissioners should consider what is most effective and fiscally feasible for the County when determining appropriate incentives.

7. **Taxation: Except as referenced in Residential Accessory Use Solar Recommendation 6, the Task Force does not find additional taxation changes are needed for residential accessory use solar systems.**

Maryland law currently provides several tax exemptions for solar facilities and equipment. Residential solar equipment, such as panels and battery boxes, is exempt from the State's sales and use tax.²¹ Solar energy equipment, regardless of whether it is used to generate electricity for on-site use or for sale on the grid, is exempt from the State's real property tax.²²

At the local tax level, residential accessory use solar systems are exempt from being included in a home's valuation for purposes of assessing local real property taxes. Thus, the State Department of Assessments and Taxation (SDAT) does not treat residential accessory use solar systems as an improvement or enhancement to the property for assessment purposes. Residential systems are also exempt from local personal property taxes.

COMMERCIAL/INDUSTRIAL/INSTITUTIONAL ACCESSORY USE SOLAR

1. **Definition: "Commercial, industrial, or institutional accessory solar energy generating facility" means an energy generating facility that:**
 - a. **uses energy from the sun to produce electricity for on-site use as an accessory to the principal commercial, industrial, or institutional use; and**
 - b. **may provide excess energy that is not immediately utilized on-site or temporarily stored for future use on-site to a utility company that provides electrical service to the property where the commercial, industrial, or**

institutional accessory solar energy generating facility is located in exchange for a credit or other compensation as determined by the utility company.”

This definition of commercial/industrial/institutional accessory use mirrors the definition for residential accessory use solar outlined in **Residential Accessory Use Solar Recommendation 1**. The Task Force drafted the definition after reviewing various other county ordinances and consulting with the County’s Department of Land Use and Growth Management.

- 2. Setback and Height Requirements: Pole-mounted, ground-mounted, and canopy systems should comply with the setback and height requirements applicable to an accessory structure in the zone in which the system is located.**

Similar to any other accessory use structure located on a property, commercial/industrial/institutional accessory use solar systems should comply with appropriate setback and height requirements. This ensures that the systems blend in with the character of the area where they are located.

- 3. Additional Permits: The Task Force does not believe any additional permits, beyond those currently required for construction, electrical work, and inspection should be required.**

This recommendation mirrors the current practices of other Maryland counties reviewed by the Task Force.

- 4. County Property Solar Survey: The County should review all of its current institutional facilities on the physical and economic viability of adding institutional accessory use solar.**

Numerous other counties in Maryland have added accessory use solar systems on their institutional lands and properties, including on top of buildings, over parking structures, and on sites such as landfills, water or sewage treatment plants, and appropriate recreational lands. These projects can result in long-term energy cost savings and decreased air pollution and greenhouse gas emissions. Institutional solar projects usually compliment the primary use of the property and can provide a modest relief against building solar projects on prime farmland or lands with more valuable uses. The Conservancy report can provide a starting point in identifying suitable County-owned lands.

5. Taxation: The Task Force does not find additional taxation changes are needed for commercial, industrial, or institutional accessory use solar systems.

As further discussed in **Residential Accessory Use Solar Recommendation 7**, solar energy equipment for all categories of solar projects is exempt from the State’s real property tax.

At the local tax level, commercial/industrial/institutional accessory use solar systems are assessed by SDAT as being part of a building’s heating and cooling system and can increase a building’s real property tax value if the building lacks any heating or cooling system beyond what is provided by the solar system.

Commercial/Industrial/Institutional accessory use systems can be subject to local personal property taxes.

COMMUNITY SOLAR

Currently, community solar is not available in the County as SMECO does not participate in the State’s community solar pilot program. However, the Task Force offers the following recommendations regarding the zoning and siting of community solar projects in anticipation that community solar will be allowed within the County in the future.

1. Definition: “Community solar energy generating system” has the meaning indicated in §7-306.2 of the Public Utilities Article of the Maryland Code.

As community solar is already defined under State law, the Task Force believes it is most efficient for the County to reference that definition as opposed to creating a different local definition.

The relevant part of § 7-306.2 reads as follows:

- “(a) (1) In this section the following words have the meanings indicated.
- (3) “Community solar energy generating system” means a solar energy system that:
 - (i) is connected to the electric distribution grid serving the State;
 - (ii) is located in the same electric service territory as its subscribers;
 - (iii) is attached to the electric meter of a subscriber or is a separate facility with its own electric meter;
 - (iv) credits its generated electricity, or the value of its generated electricity, to the bills of the subscribers to that system through virtual net energy metering;
 - (v) has at least two subscribers but no limit to the maximum number of subscribers;

- (vi) does not have subscriptions larger than 200 kilowatts constituting more than 60% of its subscriptions;
- (vii) has a generating capacity that does not exceed 2 megawatts as measured by the alternating current rating of the system's inverter; and
- (viii) may be owned by any person.”

2. Zoning: The Task Force recommends that community solar projects be allowed in all zones as a “Solar, Minor” project.

The “Solar, Minor” designation is a new designation created with input from the County’s Department of Land Use and Growth Management. The new designation is a refinement of the County’s current “Utility, Minor” designation and would apply to community solar projects. The new designation allows the County to craft ordinances and regulations that directly address the unique needs and characteristics of a community solar project.

Proposed Table of Uses – Community Solar

Use Type	Use Intensity	RPD	RSC	RCL	RL - T	RL	RM	RH	RNC	RMX	VMX	TMX	CMX	MXH	MXM	MXL	LCI	I	OBP	CM	Critical Area Overlay	<u>AICUZ Overlay</u> and FAR
Solar, Community Scale.	Low	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	RCA LDA IDA	APZ-2 -

3. Application Process: Community solar projects should be treated as a permitted use.

Community solar projects are smaller in size and scope than utility-scale solar projects and the Task Force believes that community solar projects can be adequately accommodated through the County’s existing permit process. The Task Force feels this is efficient and cost-effective for both the County and community solar developers.

4. Setback Requirements: The Task Force recommends that community solar projects be subject to the existing setback requirements for each applicable zone.

Given that solar energy generation projects operate in a largely passive manner, the Task Force does not believe any special setback requirements are needed beyond what the County normally requires. Visual screening requirements are addressed in **Community Solar Recommendation 5.**

5. **Buffer Requirements:** The Task Force recommends that Type A Buffer requirements be applied to community solar projects with the following modifications: (1) the buffer width be altered to 20’; and (2) additional understory vegetation can be substituted for canopy trees where the placement of canopy trees would negatively affect the energy generation capacity of the project.

While few Maryland counties specifically address community solar, many do address utility-scale solar and all of those that do require some form of vegetative screening. The buffer widths and vegetation requirements in other counties vary significantly. The buffer requirements under this Recommendation were developed in consultation with the County’s Department of Land Use and Growth Management and are designed to integrate with existing buffer requirements to the maximum extent practicable.

Current St. Mary’s County Buffer Yard Standards

	Buffer Yard Types		
	A	B	C
Buffer yard minimum width ³	15 feet	65 feet ¹	30 feet ²
Canopy trees (per 100 lineal feet)	2	4	5
Under story trees (per 100 lineal feet)	4	5	7
Evergreen trees and shrubs-min. 4’ tall (per 100 lineal feet)	-	11	14
Shrubs (per 100 lineal feet)	10	22	27
Berm height	-	- ¹	6 feet ^{2,3}
Fence ⁴	-	- ¹	6 feet ^{2,3,4}

1. No fences are required as part of buffer yards A and B.
2. Except when a fence or berm is specifically required per the standards of Chapter 51, projects may be exempted from the requirement to provide a fence or berm when the buffer of at least 35 feet in width is maintained in undisturbed existing forest cover.
3. Unless both a fence and a berm are required per Article 5, Regulation of Uses, the berm may be replaced by a 6-foot tall fence or a 6-foot tall masonry wall located at the side of the buffer having the higher intensity use.
4. A fence of a different specified height may be required per Article 5, Regulation of Uses.
5. In the DMX zone, all buffer requirements shall be satisfied by an “A” buffer.

Source: Schedule 63.3.a, St. Mary’s County Zoning Ordinance

6. **Decommissioning Requirements:** A developer of a community solar project should submit a decommissioning plan to the County as part of its application. The plan should describe how the site will be restored to its original state prior to the construction of the community solar project within one year after the community solar project ceases operation or is deemed abandoned. The plan should be subject to County approval.

The Task Force believes that the County should require a community solar project to submit a decommissioning plan for County approval, similar to what the PSC requires for utility-scale applicants as part of the CPCN process. The largest community solar projects can cover just over 10 acres in size and a decommissioning plan is a reasonable requirement for a project of that size.

The Task Force considered but does not recommend that a bond or other financial security accompany the decommissioning plan. Community solar projects operate at a much-reduced scope than utility-scale solar projects and the inclusion of a bond requirement could impact the financial viability of these smaller projects. Similarly sized industrial and commercial facilities typically do not have a bonding requirement.

- 7. Other Requirements: Community solar projects should not unreasonably restrict or limit a historic or scenic viewshed. The Commissioners should also consider whether to require a community solar project to submit to the County an operation and maintenance agreement for stormwater management and vegetation upkeep. The agreement could include a bond or other financial agreement acceptable to the County to ensure proper enforcement.**

The Task Force believes that community solar projects should be integrated into the character of the surrounding landscape to the maximum extent practicable, particularly where the project could impair a historic or scenic viewshed. While small concessions may be reasonable in certain situations, the County should work closely with a project to protect an impacted historical or scenic viewshed.

Few of the counties that the Task Force reviewed directly address community solar projects but some of those that address utility-scale solar in their ordinances require a developer to provide an operation and maintenance agreement for stormwater management and vegetation upkeep. Some also require a bond or other financial agreement as a guarantee. While smaller in size than utility-scale projects, community solar projects can still be slightly larger than 10 acres – a size where an operation and maintenance agreement may be appropriate.

- 8. Additional Permits: The Task Force does not believe any additional or special permits, beyond those currently necessary for a permitted use project, should be required.**

Few of the other Maryland counties reviewed by the Task Force address community solar directly (Anne Arundel County being a notable exception) but in general the other counties do not require additional or special permits for solar projects beyond those normally required as part of the normal siting and construction process.

9. **Community Solar Capacity:** The County should support policy changes at the state level to allow for additional development capacity of community solar projects. This includes increasing the current statewide aggregate community solar development cap of 418 MW. As part of its efforts, the County should work with the Maryland Association of Counties (MACo) and other interested counties and municipalities.

Community solar is a somewhat newer and growing segment of the solar industry. A community solar project's smaller size allows it to be more readily placed into developed areas that would be untenable for a utility-scale project. The subscriber model used by community solar also allows a project to directly target underserved communities or populations.

Given these benefits, the Task Force believes the use community solar should be encouraged and expanded in Maryland.

10. **Identification of Potential Aggregators:** The County should identify persons, including the County and its municipalities, who are interested in being aggregators for community solar projects.

Assuming community solar becomes available in the County, the Task Force believes that identifying individuals, businesses, non-profit organizations, local governments, and other qualified persons who may be interested in becoming an aggregator could help facilitate potential projects within the County.

11. **Incentives:** The County should consider fiscal or policy incentives for community solar projects, as defined by § 7-306.2 of the Public Utilities Article of the Maryland Code. One potential incentive could be the creation of a Payment in Lieu of Taxes (PILOT) program.

In order to encourage the development of community solar projects, the County should consider fiscal or policy incentives to make their development easier. Such incentives could include a faster application and review process, reduced or waived application fees, liability protection for pre-existing conditions on the property, solar development grants or loans, and reduced or waived income or property taxes. The Commissioners should consider what is most effective and fiscally feasible for the County when determining appropriate incentives.

One potential incentive that is used in other Maryland counties is the PILOT program. In a PILOT program, a government reaches an agreement with a property owner to make a single or recurring set of payments instead of paying real property taxes. PILOTs can

apply to: (1) properties that are normally tax-exempt but voluntarily agree to a PILOT to pay a percentage equivalent of the real property tax or to cover a share of provided services; and (2) nonexempt properties that agree to the PILOT as an alternate arrangement to paying regular taxes.²³ Maryland and its counties use PILOT programs for a variety of different projects, including: economic development projects, low income housing, senior citizen housing, and unique venues such as the Hippodrome Performing Arts Center in Baltimore City.

Community solar projects typically fall into the nonexempt property category and a PILOT can be an incentive to develop in a specific area, as long as the property meets the other characteristics for a viable project site.

UTILITY-SCALE SOLAR

- 1. Definition: “Utility-scale solar energy generating system” means a facility that:**
 - a. uses energy from the sun to generate photovoltaic electricity primarily for use off-site;**
 - b. sells the photovoltaic power to the regional wholesale electricity market;**
 - c. has a generating capacity of more than 2 megawatts; and**
 - d. requires a Certificate of Convenience and Public Necessity from the Maryland Public Service Commission.”**

This definition is a composite developed from various Maryland county definitions and in consultation with the County’s Department of Land Use and Growth Management.

- 2. Developer Notification and Communication Requirements: The County should urge utility-scale solar project developers to communicate with the County as early as possible. Initial contact should be through the St. Mary’s County Department of Land Use and Growth Management.**

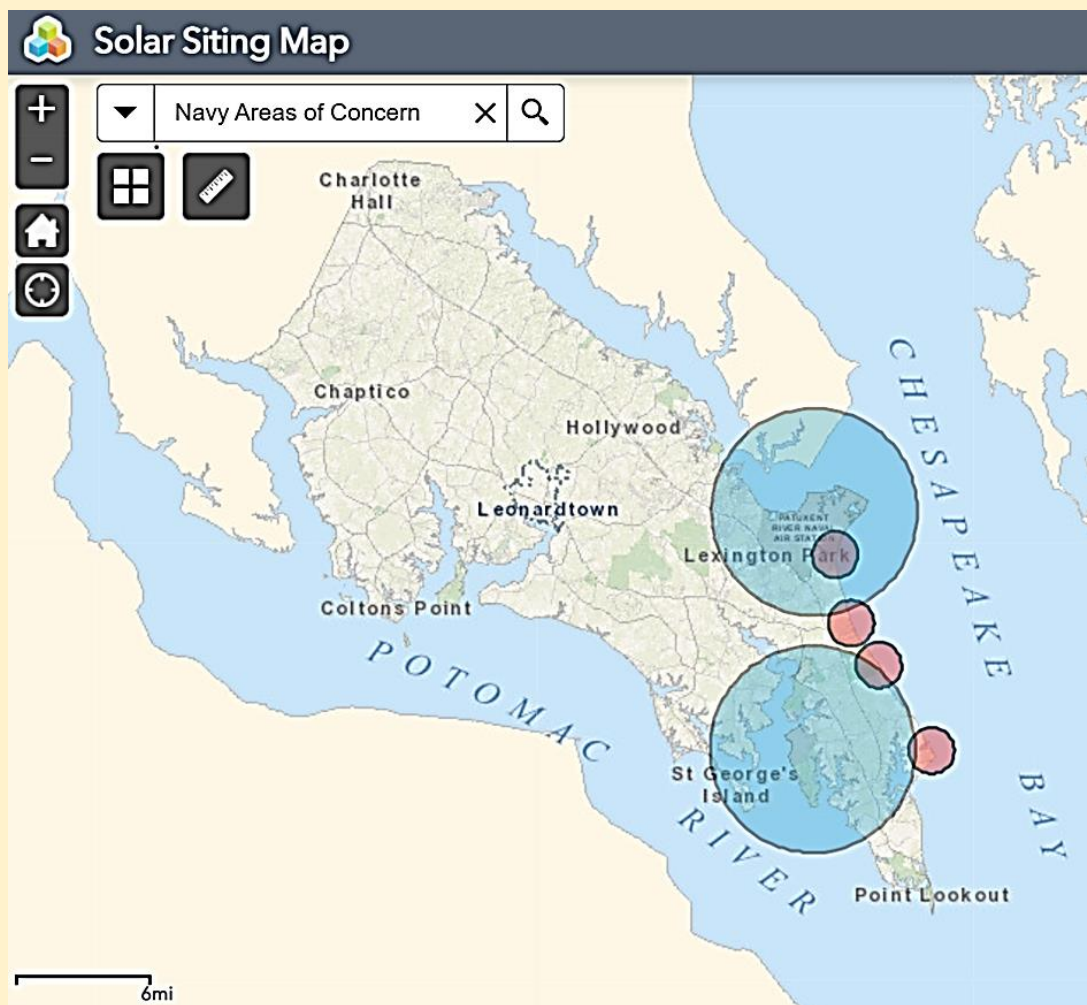
Like any type of complex development project, open and early communication between potential utility-scale solar developers and the County can highlight and resolve issues that could become significant later in development process. This can save time and money for both the County and the developer. Better communication also increases public transparency.

As noted in “The Context for Solar Siting” section of this report, the PSC is proposing regulations that would require a pre-application consultation requirement between developers and affected local governments.

- 3. Navy Development Issues:** The United States Navy is part of the County's Technical Evaluation Committee, and they will always be part of the County's utility-scale solar approval process. A utility-scale solar developer is therefore strongly urged to consult with Navy leadership as early as possible in the development cycle, especially if a proposed utility-scale solar project falls within a 4.5-mile radius from the designated center of Patuxent River Naval Air Station or Webster Outlying Field, or within a 1-mile radius from an Atlantic Test Range theodolite.²⁴

For projects located within the listed radii, the Navy may request additional studies from a developer, such as a glint/glare impact analysis, a heat retention analysis, or an electromagnetic interference (EMI) analysis.²⁵

Additionally, utility-scale solar sites should be available for military review through local Geographic Information System (GIS) maps or a state GIS system like Smart DG+.²⁶



Map is for illustrative purposes only. Source: Mapping tool created by St. Mary's County GIS Manager Eric Benson.²⁷

Pilot glare, EMI, and security concerns with solar equipment could pose risks to military operations within the County. The County’s utility-scale solar siting process should acknowledge and protect the mission of defense agencies located within the County, particularly the United States Navy.

The Task Force developed this recommendation in consultation with representatives of the United States Navy. The representatives have reviewed and concurred with the recommendation.

4. **Zoning:** A utility-scale solar project should be treated as a “Solar, Major” project and be allowed in all zones as a permitted use, subject to site plan approval. Incentives and the level of County review for a project should be based on which Utility-scale Solar Siting Category the project falls within.

The “Solar, Major” designation is a new designation created with input from the County’s Department of Land Use and Growth Management. The new designation is a refinement of the County’s current “Utility, Major” designation and would apply exclusively to utility-scale solar projects. The new designation allows the County to craft ordinances and regulations that directly address the unique needs and characteristics of a utility-scale solar project.

Proposed Table of Uses – Utility-scale Solar

Use Type	Use Intensity	RPD	RSC	RCL	RL - I	RL	RM	RH	RNC	RMX	VMX	TMX	CMX	MXH	MXM	MXL	LCI	I	OBP	CM	Critical Area Overlay	<u>AICUZ Overlay and FAR</u>
Solar, Utility Scale.	Low	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	IDA	- -

Rather than focus on general development limitations based on a property’s zoning designation, the Task Force determined that decisions surrounding the siting of utility-scale projects should be based on the specific characteristics of a project’s proposed site. The Task Force has developed four Utility-scale Solar Siting Categories to help inform this more granular approach.

The Siting Categories were developed based on review of GIS maps and information provided by the Conservancy report.

Utility-scale Solar Siting Categories

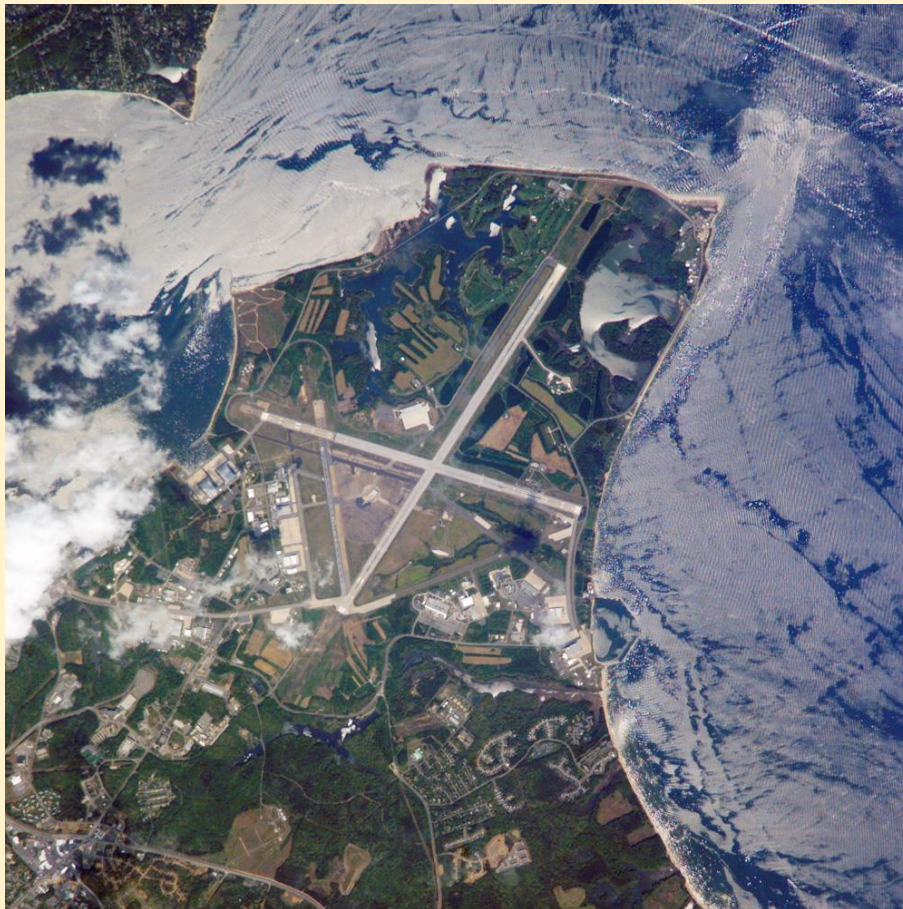
A. *Areas with No or Limited County Jurisdiction*

These are areas where the County has little or no legal authority regarding utility-scale solar siting.

Areas where the County has no jurisdiction include: Patuxent River Naval Air Station, Webster Outlying Field, and other federal lands; state lands and parks; and Rural Legacy Areas (State law controls utility-scale solar development in Rural Legacy Areas).²⁸ For these areas, the County's role is at best advisory in nature.

Areas where the County has limited jurisdiction includes areas located within incorporated municipalities that exercise their own planning and zoning authority, such as Leonardtown. For these areas, the County should work with its municipalities to address how proposed utility-scale solar projects that are located within the boundaries of the municipality should be handled.

Patuxent River Naval Air Station

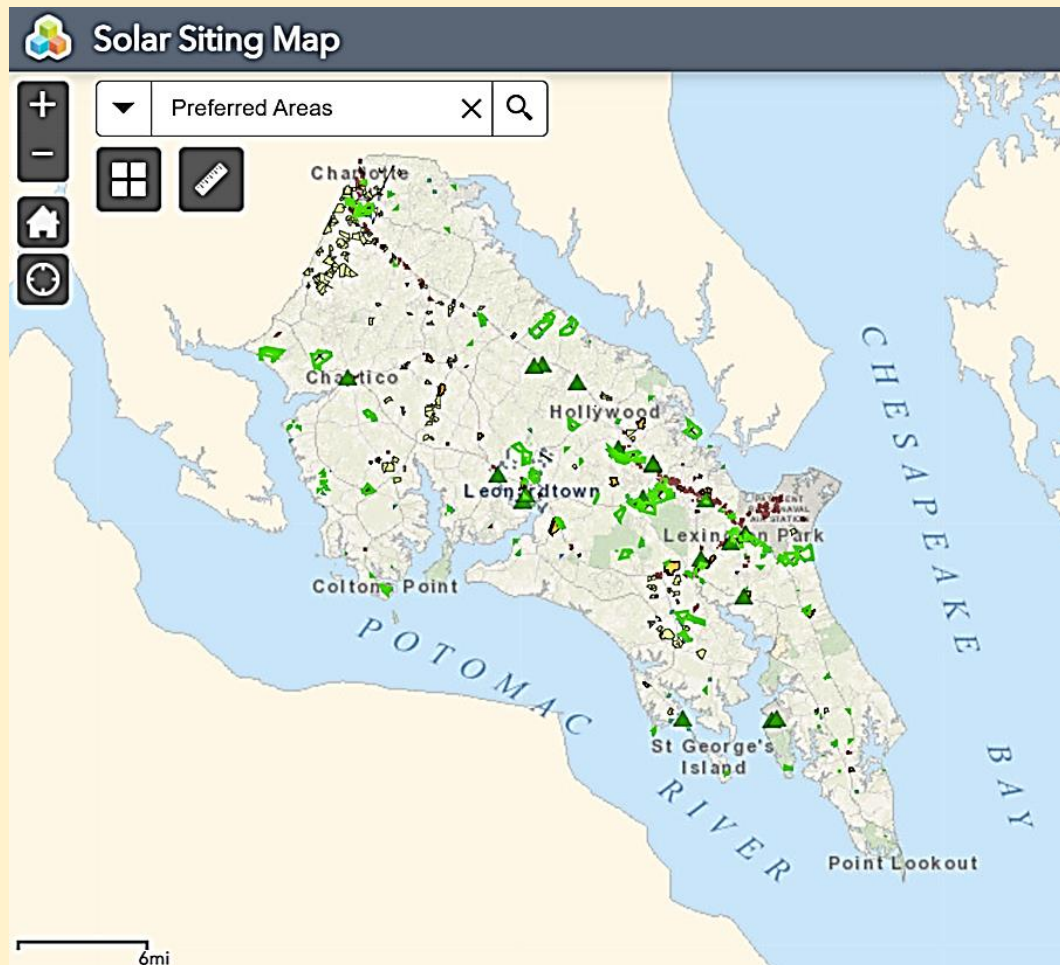


B. Preferred Areas

These are areas where utility-scale solar either represents a potential best use of the land or is synergistic with existing uses of the land.

Preferred Areas include the following characteristics:

- i. County-owned lands and facilities such as landfills, water treatment plants, and wastewater treatment plants;
- ii. Public school-owned lands;
- iii. Voluntary Cleanup Program restoration sites;
- iv. Brownfield sites;
- v. Parking lots or similar grayfields; and
- vi. Industrial zones.



Map is for illustrative purposes only. Source: Mapping tool created by St. Mary's County GIS Manager Eric Benson.

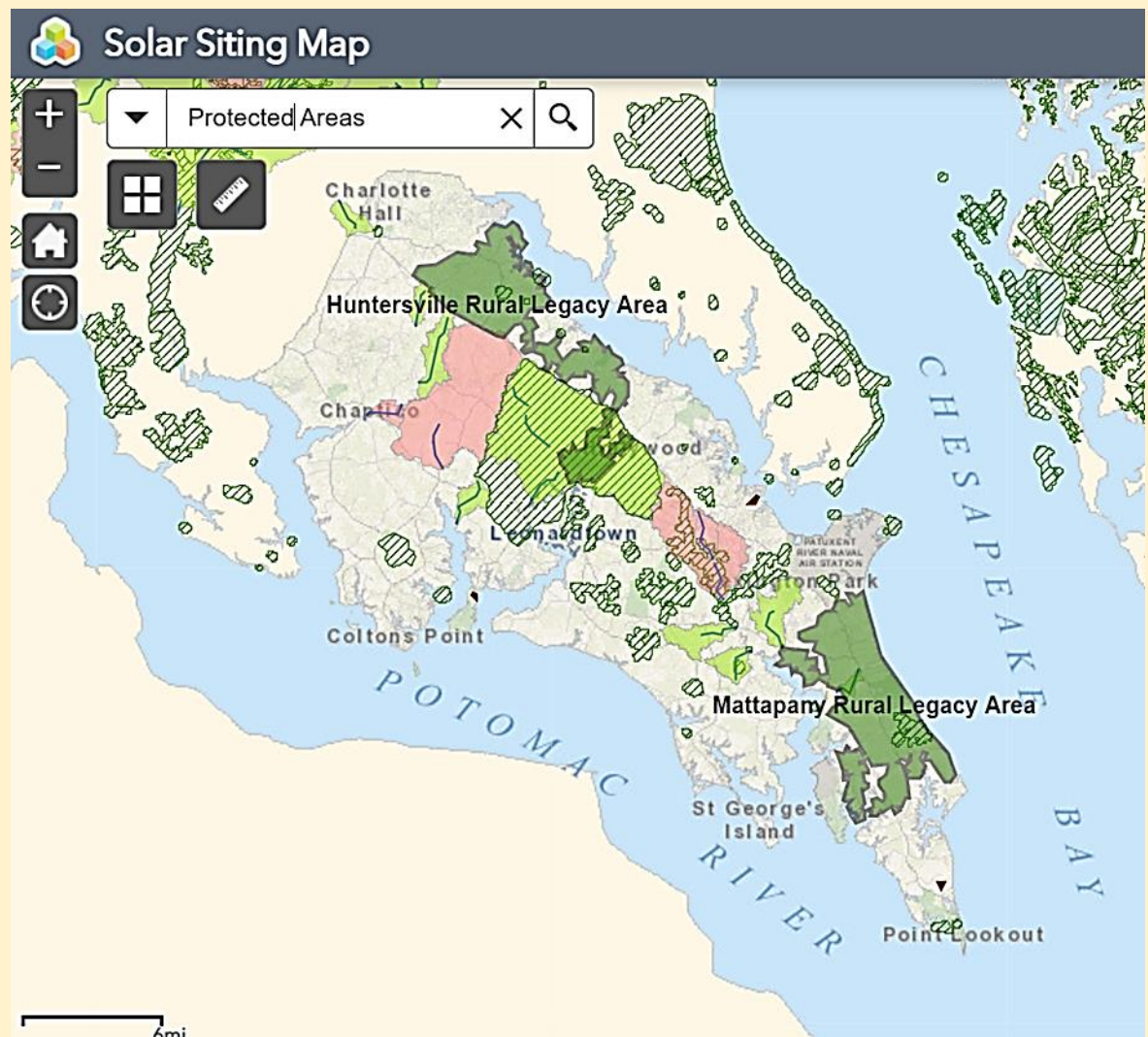
See **Recommendation Utility-scale Solar 12** for further information on County treatment of Preferred Areas.

C. Protected Areas

These are areas that have environmental, historical, or economic characteristics that are worthy of protection and should only rarely be supported for utility-scale solar development.

Protected Areas include the following characteristics:

- i. Located in a Resource Conservation Area within a Critical Area;
- ii. Lands that include or are directly adjacent to a Maryland Department of the Environment Tier II Catchment or Stream Segment;
- iii. Lands that are part of a Maryland Sensitive Species Project Review Area; and
- iv. Maryland Department of Natural Resources designated Wetlands.



Map is for illustrative purposes only. Source: Mapping tool created by St. Mary's County GIS Manager Eric Benson.

The County should review utility-scale solar projects proposed in a Protected Area on a case-by-case basis with enhanced scrutiny, such as a Conditional Use hearing before the Board of Appeals. The benefits of the proposed project should be carefully weighed against the loss or damage to the environmental, historical, or economic characteristics of the proposed project's location.

D. *Allowed Areas*

These are areas where utility-scale solar siting could be located but lack the optimal siting characteristics of Preferred Areas or the environmental, historical, or economic characteristics of Protected Areas. This is the category for an area that does not fall into one of the other three categories.

The County should review utility-scale solar projects proposed in an Allowed Area with the regular scrutiny accorded to other development projects.

5. **Application Process: The Task Force recommends that utility-scale solar projects go through the Concept Site Plan approval process with the St. Mary's County Planning Commission. This process requires a public hearing for all utility-scale solar projects.**

Given the potential size and scope of utility-scale solar projects and the likely interest of nearby residents and stakeholder groups, the Task Force believes that having a proposed project go through the County's Concept Site Plan approval process provides an appropriate level of County and public review while not unduly burdening a developer with additional regulatory requirements.

The public hearing would be in addition to the public hearing required by the PSC as part of the CPCN process but is less onerous than applying for a special exception.

6. **Setback Requirements: The Task Force recommends that utility-scale solar projects be subject to the existing setback requirements for each applicable zone.**

Given that solar energy generation projects operate in a largely passive manner, the Task Force does not believe any special setback requirements are needed beyond what the County normally requires. Visual screening requirements are addressed in **Utility-scale Solar Recommendation 7**.

7. **Buffer Requirements: When adjacent to a property with a residential use, the boundary of a utility-scale solar project should be subject to Type C Buffer requirements with the following modifications: (1) the fencing requirement is not applicable; and (2) additional understory vegetation can be substituted for canopy**

trees where the placement of canopy trees would negatively affect the energy generation capacity of the project.

When adjacent to a property with a non-residential use, the boundary of a utility-scale solar project should be subject to Type A Buffer requirements with the following modifications: (1) the buffer width be altered to 20 feet; and (2) additional understory vegetation can be substituted for canopy trees where the placement of canopy trees would negatively affect the energy generation capacity of the project.

All Maryland counties that the Task Force reviewed and that specifically address utility-scale solar siting require some form of vegetative screening. The buffer widths and vegetation requirements in other counties vary significantly. The buffer requirements under this recommendation were developed in consultation with the County’s Department of Land Use and Growth Management and are designed to integrate with existing buffer requirements to the maximum extent practicable.

Site fencing is a general requirement as part of the CPCN process so the Task Force did not believe a separate local fencing requirement was necessary.

Current St. Mary’s County Buffer Yard Standards

	Buffer Yard Types		
	A	B	C
Buffer yard minimum width ³	15 feet	65 feet ¹	30 feet ²
Canopy trees (per 100 lineal feet)	2	4	5
Under story trees (per 100 lineal feet)	4	5	7
Evergreen trees and shrubs-min. 4’ tall (per 100 lineal feet)	-	11	14
Shrubs (per 100 lineal feet)	10	22	27
Berm height	-	- ¹	6 feet ^{2,3}
Fence ⁴	-	- ¹	6 feet ^{2,3,4}

1. No fences are required as part of buffer yards A and B.
2. Except when a fence or berm is specifically required per the standards of Chapter 51, projects may be exempted from the requirement to provide a fence or berm when the buffer of at least 35 feet in width is maintained in undisturbed existing forest cover.
3. Unless both a fence and a berm are required per Article 5, Regulation of Uses, the berm may be replaced by a 6-foot tall fence or a 6-foot tall masonry wall located at the side of the buffer having the higher intensity use.
4. A fence of a different specified height may be required per Article 5, Regulation of Uses.
5. In the DMX zone, all buffer requirements shall be satisfied by an “A” buffer.

Source: Schedule 63.3.a, St. Mary’s County Zoning Ordinance

- 8. Decommissioning Requirements: The Task Force recommends that a utility-scale solar developer provide proof to the County that the developer has complied with the decommissioning requirements, including proof of a bond or other financial security, set forth by the PSC.**

The PSC requires a utility-scale solar CPCN applicant to provide a plan for decommissioning and the posting of a bond in the sufficient amount to carry out that plan. These requirements should be sufficient to address County concerns and the Task Force does not believe a separate local requirement is needed.

- 9. Other Requirements: Utility-scale solar projects should not unreasonably restrict or limit a historic or scenic viewshed. The Commissioners should also consider whether to require a utility-scale solar project to submit to the County an operation and maintenance agreement for stormwater management and vegetation upkeep. The agreement could include a bond or other financial agreement acceptable to the County to ensure proper enforcement.**

The Task Force believes that utility-scale solar projects should be integrated into the character of the surrounding landscape to the maximum extent practicable, particularly where the project could impair a historic or scenic viewshed. While small concessions may be reasonable in certain situations, the County should work closely with a project to protect an impacted historical or scenic viewshed.

Some of the other counties that the Task Force reviewed and that address utility-scale solar in their ordinances require a developer to provide an operation and maintenance agreement for stormwater management and vegetation upkeep. Some also require a bond or other financial agreement as a guarantee.

- 10. Additional Permits: The Task Force does not believe any additional permits, beyond those currently required for zoning and construction approval, should be required.**

While some counties do require all utility-scale solar projects to obtain additional permits by going through a special exception or floating zone process, the Task Force does not believe that is generally necessary for the County given the zoning and application process recommendations made by the Task Force in **Utility-scale Solar Recommendations 4 and 5**. Those recommendations require additional scrutiny, such as a Conditional Use public hearing for a utility-scale solar project proposed in a Protected Area.

11. Right to Participate in CPCN Process: The County should support policy changes at the state level to allow an affected county or municipality to have an automatic right to participate in the Public Service Commission hearing process as a party of interest, if desired.

As discussed in “The Context for Solar Siting” section of this report, local governments have the right to petition to participate in the CPCN process as a party of interest if desired. There has been discussion at the State level of automatically making a local government a party of interest for all utility-scale solar CPCN applications located within that jurisdiction, but no concrete action has been taken on this proposal.

As there have been situations where a county government has no issues with or supports a utility-scale solar project, the Task Force does not believe requiring a local government to be a party of interest in the CPCN process would be appropriate. Instead, the Task Force believes that an affected local government desires to be a party of interest, that right should be granted automatically, rather than being the subject of a petition process.

12. Incentives: The County should consider fiscal or policy incentives for utility-scale solar projects that are located in Preferred Areas. One potential incentive could be the creation of a PILOT program.

In order to encourage the development of utility-scale solar projects in Preferred Areas, the County should consider fiscal or policy incentives to make development in those areas easier. Such incentives could include a faster application and review process, reduced or waived application fees, liability protection for pre-existing conditions on the property, solar development grants or loans, and reduced or waived income or property taxes. The Commissioners should consider what is most effective and fiscally feasible for the County when determining appropriate incentives.

One potential incentive that is used in other Maryland counties is the PILOT program. PILOT programs are discussed in more detail in **Community Solar Recommendation 11**. Utility-scale solar projects typically fall into the nonexempt property category and a PILOT can be an incentive to develop in a specific area, as long as the property meets the other characteristics for a viable project site.

FUTURE CONSIDERATIONS

The Task Force hopes that the Principles, Recommendations, and background information contained in this report are helpful to the County's citizens, Commissioners, and government agencies. Solar energy can be expected to play a major role in the State's energy footprint in the near future and it is critical that St. Mary's be prepared to meet the new challenges posed by solar development. Policies and zoning that encourage a mix of different kinds of solar projects while protecting the County's core economic drivers, cultural heritage, and natural resources will ensure the County is well positioned to grow and prosper well into the 21st century.

While the Task Force hopes that its report provides a strong foundation to fully incorporate solar power into the County's landscape, we recognize that it is only the start. The County will face future challenges, including: (1) changing State laws and regulations; (2) the construction of small-scale battery storage facilities in homes and businesses and large-scale facilities for grid stability; (3) changes and expansion of the State's electrical grid; (4) the eventual decommissioning of some solar facilities and recycling or disposal of solar panels; and (5) consideration of solar panel construction as a viable industry in the County.

These challenges will no doubt require additional considerations that are beyond the scope and mandate of this Task Force.



APPENDIX 1 – TASK FORCE GUEST SPEAKERS

June 10, 2020

- The Honorable Todd Morgan, Commissioner of St. Mary's County

July 8, 2020

- Sabrina J. Hecht, AICP, Community Planning Liaison Officer, NAS Patuxent River

August 12, 2020

- Brandon Hayden, Procurement Manager, St. Mary's County Department of Finance
- Zane Rettstatt, Project Manager III, Department of Public Works & Transportation

October 14, 2020

- Tom Dennison, Government & Public Affairs, Managing Director, SMECO

Nov 18, 2020

- Cindy Greb, Executive Director of Southern Maryland Resource Conservation & Development
- Bruce Young, District Manager, St. Mary's Soil Conservation District

January 13, 2021

- Joseph Guyther, Fire Board for the Technical Evaluation Committee
- Derek Murgatroyd, Office of the Maryland State Fire Marshal
- John Nelson, Commander-Southern Region, Office of the State Fire Marshal
- Frances Yuhas, Managing Director, Development, Turning Point Energy

April 14, 2021

- Susan Minnemeyer, Vice President for Technology, Chesapeake Conservancy

Note: This list excludes presentations from the Consultant and the Task Force's regular County staff.

APPENDIX 2 – KEY SOLAR CONCEPTS

When attempting to categorize solar projects for the purpose of zoning and regulation, it is important to first understand several key concepts, including accessory use, net metering and aggregate net metering, and solar mounting systems.

Accessory Use

An accessory use is a use that is subordinate to and serves the principal use of the property. For solar systems, this means that all or most of the electricity generated by the system is used on site and not sold commercially to other users.

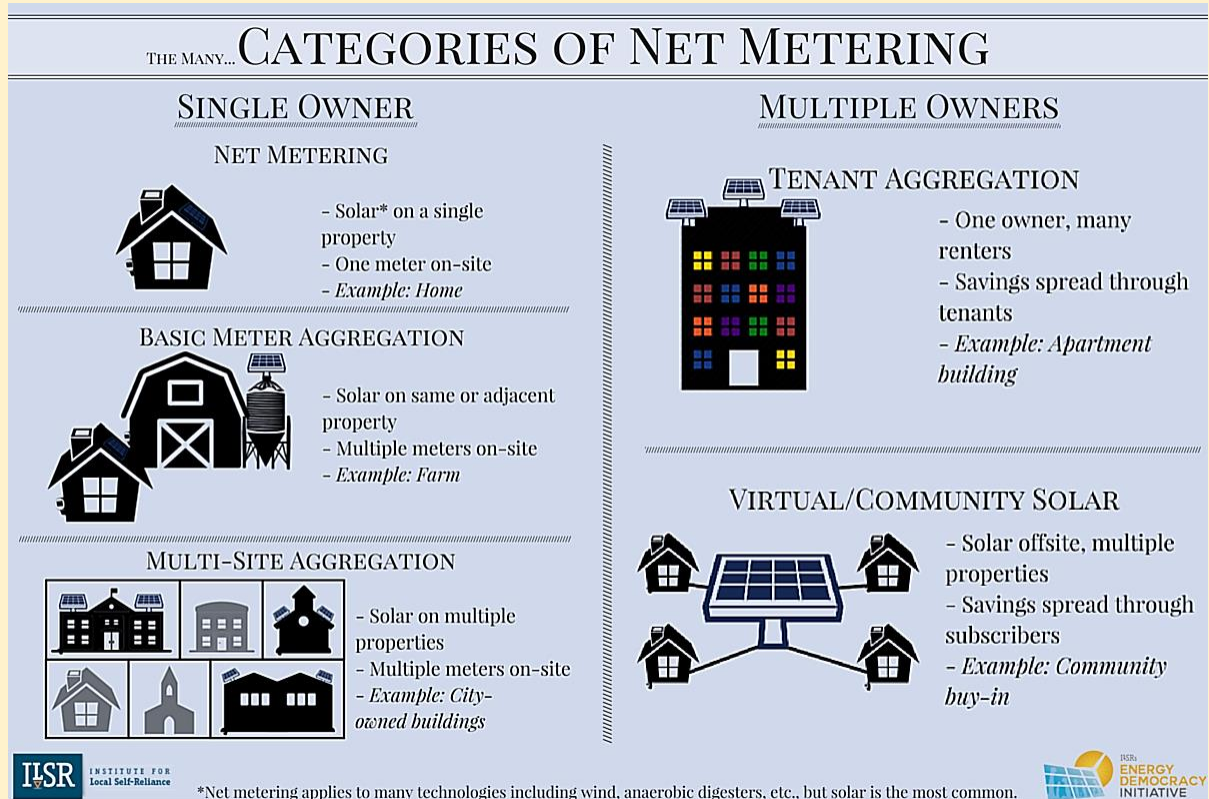
Net Metering & Aggregate Net Metering

Net metering and aggregate net metering describe different ways for accounting for solar energy that is generated and used both on-site and off-site by accessory use solar systems and other types of systems that do not generate electricity exclusively for general sale on the electrical grid.

- **Net Metering:** Net metering is a billing mechanism that allows property owners with an accessory use solar system to transfer surplus electricity generated by the system onto the power grid. The public utility offsets the property owner's power bill based on the amount of surplus electricity generated, even allowing the property owner to make a profit if the amount of surplus electricity generated is greater than the amount of electricity the property owner used from the grid.

In Maryland, accessory use solar systems must have no more than 2 megawatts of capacity in order to be eligible for net metering and there is a statewide limit of 1,500 MW of total allowed net metered capacity.²⁹ Additionally, the designed system production is limited to 200 percent of the annual baseline customer electricity usage. Legislation passed during the 2021 Maryland General Assembly Session will double the statewide cap to from 1,500 MW to 3,000 MW effective October 1, 2021.³⁰

- **Aggregate Net Metering:** When applied to a specific property, net metering typically refers to a situation where the solar system is located on a single property and is connected to one on-site electric meter (such as a home). Aggregate net metering covers situations where there are solar systems located on multiple properties or where there are multiple meters or users. The following chart summarizes the different types and characteristics of net metering and aggregate net metering projects:



Source: “Aggregate Net Metering”, Institute for Local Self-Reliance (ILSR), <https://ilsr.org> (June 5, 2015)

The same 2 MW system cap and statewide total cap that applies to single net metered properties also applies to the various types of aggregate net metered systems. Maryland allows virtual/community solar under a specific community solar pilot program that is discussed under the “Solar Project Categories” section of this report.

Solar Mounting Systems

Solar panels can be mounted in one of several ways. How a solar panel is mounted can determine its efficiency, cost, and aesthetic with the surrounding area.

- **Roof Mounted:** One of the most common types of solar panel installation is the roof mounted system. The solar panels are installed on the roof of a home, business, agricultural building, industrial facility, or government or institutional building. The panels may be static or mounted on a tracking system that moves the panels in conjunction with the movements of the sun. A roof's solar exposure and structural design, along with relevant fire and building safety codes, can limit the number of solar panels that can be placed on the roof.



- **Ground Mounted:** Ground mounted systems are common for large solar energy generation stations. The panels are mounted on frames secured directly to the ground. The panels may be static or mounted on a tracking system that moves the panels in conjunction with the movements of the sun.



- Pole Mounted: Pole mounted systems include solar panels mounted on a pole that offers more verticality than a ground mounted system. Pole mounted solar arrays are typically square or rectangular in shape. Their width and height can range from a few feet to 15 feet or more. The panels may be static or mounted on a tracking system that moves the panels in conjunction with the movements of the sun.



- Canopy: Canopy systems use multiple pole mounts create a “canopy” of solar panels over an open space. Canopies are mainly used for parking lots, open-sky levels of parking garages, and single parking spaces. They can also be used to cover other areas like decks or patios. The canopy has the additional benefit of providing shade to any vehicles or people underneath the canopy. A drawback to canopy systems for parking lots and parking garages is an increased cost compared to other types of solar mounting systems.



APPENDIX 3 – BENEFITS AND CHALLENGES OF SOLAR ENERGY

Similar to any other kind of development, solar energy generation projects have both benefits and challenges. While the Task Force believes that the benefits of solar energy outweigh its challenges, it is important to acknowledge and mitigate any challenges as the County develops its solar energy land use policies.

Key Benefits

1. Clean and Renewable Energy Generation: The most obvious benefit of a solar project is the generation of renewable and sustainable energy. Such renewable energy sources provide environmental, climate, and public health benefits.
2. Passive Operation: As solar panels generate electricity passively from the sun, they do not produce any harmful air pollution or greenhouse gases during operation. Solar panels and support equipment are also quiet, generating limited noise.
3. Low Maintenance: Maintenance for most solar panel systems is minimal. Solar systems have no moving parts unless the panels are mounted on a tracking system that synchronizes the panel position with the movements of the sun. Solar panels naturally lose efficiency over time but rarely completely break down or go bad.³¹
4. Grid Security and Resiliency: Traditionally, Maryland’s electricity has come from large, centralized facilities such as coal, oil, and nuclear plants. A natural disaster, malfunction, accident, or intentional attack on one of these facilities could have a significant negative effect on the state’s power infrastructure given their concentrated nature. Solar energy generation projects, however, are more dispersed across the grid and thus provide greater security and resiliency.
5. Job Creation: Solar energy projects can generate “green economy” jobs, although the benefits are not equally spread across different types of projects. The two solar sectors that generate the largest amount of local, permanent jobs are: (1) solar panel installation for residential accessory use; and (2) solar panel and battery storage manufacturing (assuming the manufacturing process is done nearby or within the County). While non-residential accessory use, community, and utility-scale projects do generate some secondary jobs (legal, financing, etc.), most companies that do this type of work have their own regional teams of engineers and installers and do not directly create large numbers of permanent local positions.

Key Challenges

1. Land Intensive: Solar panels are still fairly inefficient at converting solar energy into electricity and thus require significant amounts of land cover to generate appreciable amounts of power, especially at the utility-scale. Today's best commercially available panels have a maximum efficiency rating between 20 to 23 percent, with most types of panels falling into the 16 to 19 percent range.³² Low quality or cheaply made panels have an even lower maximum efficiency. While the amount of power that can be generated at any site is contingent on the panels themselves as well as many site-specific characteristics, an average "rule of thumb" is 5 to 10 acres of panels for every 1 MW generated.

Like certain other forms of development, utility-scale solar projects are typically most efficient and cost-effective to develop on cleared, generally flat land (*i.e.*, farmland). However, unlike wind power which allows for a wide variety of concurrent agricultural uses, solar projects preclude most types of plant or animal agriculture on the site. One notable exception is the use of farmland with solar panels for pollinator habitats and research is ongoing regarding dual-use approaches. To reach Maryland's current renewable energy goals, between 7,750 and 33,000 acres of agricultural land must be converted to solar production.³³ In theory, if a solar project is decommissioned and removed from the land, there is nothing to prevent the land from returning to full agricultural usage. However, to date this appears to be an extremely rare occurrence in the United States.

2. Need to Improve Grid Capacity: Maryland's electricity grid is still largely built around power generation from centralized plants, as opposed to newer and more "dispersed" generation technologies. As more solar, wind, and other dispersed energy generators come online, the available grid capacity to handle these projects is rapidly shrinking. Upgrades to transmission lines and other grid infrastructure will have to be made to accommodate additional renewable energy growth.
3. Baseload Generator Challenge: Solar energy holds great potential to significantly supplement Maryland's energy generation and reduce our reliance on electricity produced by fossil fuels. However, achieving 100 percent renewable energy in Maryland using just solar and wind energy is likely not possible given current technology. Solar and wind generation output varies throughout the year in a way that does not meet energy demand. Looking at Maryland's 2018 load, even an idealized renewable energy distribution of 50 percent offshore wind, 30 percent onshore wind, and 20 percent solar panels would leave about 30 percent of the annual hours uncovered by renewable energy generation. These deficits are weekly to monthly in duration.³⁴

4. Solar Power Storage: Increasing the use of solar energy to meet baseload demand requires not only the construction of more solar panels but also battery storage systems that can hold surplus power generated by renewable energy systems and use that electricity during the power deficit times discussed above. However, having sufficient battery capacity to manage the weekly and monthly surpluses and deficits is currently expensive and requires around 5,924 gigawatt hours (GWH) of available storage. Even assuming significantly reduced battery costs due to advancements in storage technology over current costs, a low-end estimate of capital costs would be around \$473 billion. Addressing energy leakage from the batteries will increase the cost even further.³⁵

5. Manufacture and Disposal of Solar Panels: As with most types of electronic systems, the manufacture of solar panels involves dangerous chemicals and heavy industrial processes. These materials can pose environmental and public health risks both during construction and disposal of the products. “The toxic chemicals in solar panels include cadmium telluride, copper indium selenide, cadmium gallium (di)selenide, copper indium gallium (di)selenide, hexafluoroethane, lead, and polyvinyl fluoride. Additionally, silicon tetrachloride, a byproduct of producing crystalline silicon, is highly toxic.”³⁶

However, current solar panel recycling technology allows for significant materials recovery. Companies are able to recover about 80 percent by weight for silicon-based solar panels.³⁷ For cadmium telluride modules, up to 90 percent of glass and 95 percent of the semiconductor materials can be reclaimed.³⁸

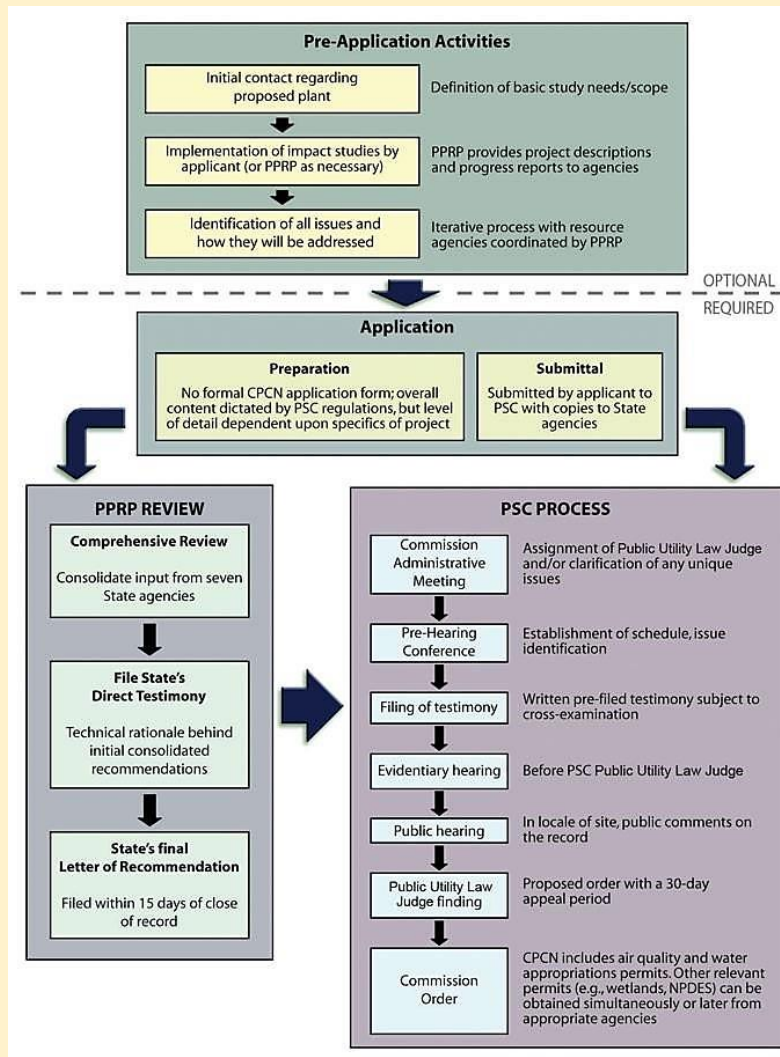
6. Military Issues: Solar energy projects can interfere with the critical missions of military bases sited in the County. Glare from the panels can be dangerous for aircraft and pilots. The military has also expressed concerns over potential EMI from solar panels disrupting sensitive communications and electronic technologies. Solar panels and related components can also present a security risk due to the potential for clandestine intelligence gathering.

APPENDIX 4 – THE CPCN PROCESS

After receiving a CPCN application, the PSC invites testimony and conducts discovery, which includes a full PPRP review and recommendations from reviewing state agencies. The PPRP coordinates with state agencies and local governments when conducting its independent review.

The PSC also holds a public hearing through an administrative law judge in the jurisdiction where the proposed project will be located. After a separate evidentiary hearing, the administrative law judge issues a proposed order, which is accepted, rejected, or modified by the PSC through a final order. A final order may be appealed to the courts. Projects accepted via a final order must comply with CPCN and any conditions set by the PSC.

CPCN Process (Updated 2017)



Source: DNR PPRP Comprehensive Environmental Impact Report³⁹

APPENDIX 5 – THE CHESAPEAKE CONSERVANCY REPORT

The Task Force decided to have the Conservancy conduct a survey of the County’s solar siting potential after reviewing a similar report the Conservancy prepared for Baltimore County and Baltimore City.⁴⁰ The Conservancy completed the County survey in March 2021.⁴¹

Based on the State’s current solar goals for 2030 and the County’s land area, the Conservancy estimated a reasonable target solar goal for the County would be around 331 gigawatt hours per year (GWh/yr). This goal assumes solar projects spread across all four categories described in the Task Force report and a future expansion of the County’s grid infrastructure, as the current grid lacks sufficient capacity to meet the 331 GWh/yr goal.

From the Conservancy report’s “Summary” section:

“In the absence of incentives for siting elsewhere, prime agricultural farmland will likely be the key land use occupied by future solar arrays, compounding the loss of farmland to residential and commercial development and the stresses on food production likely to come with climate change.

To produce the additional solar energy capacity needed in less than a decade, utility-scale solar has the potential to scale up quickly, at the lowest cost compared to other options. Maximizing the amount of solar in the built environment can achieve renewable energy goals with fewer adverse environmental impacts, while also providing the greatest amount of jobs and the opportunity for more residents to access the economic benefits of solar energy. Ground-mounted solar on optimal or preferred sites that makes use of degraded sites and avoids prime farmland and ecologically valuable areas can also provide desirable sites for solar expansion.

Based on this analysis, St. Mary’s County demonstrates the potential to create 4,097 GWh/yr of electricity from solar energy from 4,431 acres of optimal sites such as degraded lands and landfills, rooftops, parking lot canopies, and publicly owned lands. There is an additional 4,026 GWh/yr of potential electrical generation available from 2,614 acres of preferred ground-mounted opportunities less than one mile from electrical transmission lines. These numbers well exceed the 331 GWh/yr estimate for St. Mary’s share of usage compared to the rest of the state. It is likely, however, that only a small amount of the pool of identified opportunities and sites will prove to be viable development locations for a variety of reasons: owner willingness, site feasibility, building suitability for rooftop installations, or other factors. The large total number of identified options, however, indicates plenty of varied opportunity to meet the county’s needs. Looking first at sites in the built environment, there still may need to be

development on more natural areas. Options on preferred and optimal ground-mounted sites could provide further choices for siting that would avoid key adverse tradeoffs associated with land use and solar energy development—loss of forest or ecologically sensitive lands, or loss of prime farmlands. However, any use of open land will involve some land use tradeoffs. Therefore, these are considered second-tier options relative to optimal sites in the built environment and on degraded lands.”⁴²

The Task Force found the categorization and mapping of “preferred” and “optimal” solar sites very helpful in its own deliberations, especially with respect to the siting of utility-scale solar facilities, and some of the findings of the Conservancy report have been adapted by the Task Force into the solar development maps included in this report.



ENDNOTES

¹ Note that this report focuses on electricity derived from solar photovoltaic modules or cells (solar panels) and does not address alternative forms of solar energy generation, such as solar water heating.

² Commissioner Todd Morgan first requested that the Commissioners consider a Solar Task Force at the January 14, 2020 meeting of the Commissioners.

³ County zoning ordinance information was collected by the Consultant with assistance from the Maryland Association of Counties (MACo). The 11 counties that provided zoning information included: Anne Arundel, Baltimore, Calvert, Caroline, Carroll, Harford, Kent, Montgomery, Queen Anne's, Somerset, and Worcester. Not every Maryland county has specific utility-scale or community solar provisions in their zoning ordinance.

⁴ A full list of Task Force videos can be found at:
<https://www.youtube.com/playlist?list=PLGvF42PY8CVDgtqIPvj7rew0eooejFJaA>.

⁵ <https://www.stmarysmd.com/boards/groups/default.aspx?board=61>

⁶ SB 516 of 2019.

⁷ CARES was first outlined by Governor Hogan in a letter to former Senate President Thomas V. Mike Miller, Jr. on May 22, 2019. The Hogan Administration and the Maryland Department of the Environment have subsequently provided further details to the standard.

⁸ SB 323 of 2016.

⁹ SB 414 of 2021 set a statewide greenhouse gas emissions reduction target of 60% from 2006 by 2030 and net-zero carbon emissions by 2040. The bill passed both houses of the Maryland General Assembly in different forms and failed in Conference Committee. However, it is very likely that some form of the bill will be re-introduced in the 2022 Session.

¹⁰ See Title 2, Subtitle 1 of the Public Utilities Article of the Maryland Code for more information about the PSC and § 7-207 of the Public Utilities Article for more information about the CPCN process.

¹¹ See Maryland Executive Order 01.01.2019.09.

¹² Materials for the Governor's Task Force can be found at: <https://governor.maryland.gov/energy-task-force/>.

¹³ See *Board of County Commissioners of Washington County, Maryland v. Perennial Solar, LLC*, Maryland Court of Appeals, 464 Md. 610 (July 15, 2019).

¹⁴ The consistency and mitigating action requirements of § 207(e) were added to law by HB 1350 of 2017 as a legislative initiative by MACo.

¹⁵ See § 7-306.2 of the Public Utilities Article of the Maryland Code.

¹⁶ Further information about Maryland's community solar pilot program can be found at <https://www.psc.state.md.us/electricity/community-solar-pilot-program/>.

¹⁷PJM is the regional transmission organization that coordinates the movement of wholesale electricity in all or part of 13 states (including Maryland) and the District of Columbia. The PJM transmission study process can take five years or more before a developer receives interconnection permission for a proposed utility-scale solar project. Further information about PJM can be found at <https://www.pjm.com>.

¹⁸ From § 18-101 of the Anne Arundel County Zoning Code:

(123) “Solar energy generating facility – accessory” means a renewable energy generating facility that uses energy from the sun to produce electricity for on-site use as accessory to a principal use; for which excess electricity generated and not immediately utilized for on-site use or temporarily stored for future on-site use may be provided to a utility company in exchange for a credit or other compensation methodology as prescribed by the utility company, provided the property has existing electrical service supplied by the utility. If the facility is ground-based, the development of the facility shall be subject to Article 17 of this Code and the square footage of the solar panels for the system may not exceed the total square footage of the roofs of all existing structures on the site.

¹⁹ The current setbacks were instituted with the adoption of the 2018 IRC by the County on March 10, 2020.

²⁰ See § 2-119 of the Real Property Article of the Maryland Code.

²¹ See § 11-230 of the Tax – General Article of the Maryland Code.

²² See § 7-242 of the Tax – Property Article of the Maryland Code.

²³ For further information on PILOT programs, see “Property Tax Exemptions and Payments in Lieu of Taxes in Maryland”, Maryland Department of Legislative Services (January, 2014). The document can be found at: <http://dls.maryland.gov/pubs/prod/InterGovMatters/LocFinTaxRte/Property-Tax-Exemptions-and-PILOT-in-Maryland.pdf>.

²⁴ The Navy provided the following coordinates as the center of the 4.5-mile radii for the Patuxent River and Webster Field facilities:

Patuxent River: KNHK (PAX) is 30 d 17' 30" N | 76 d 24' 59" W
KNUI (OLF Webster) is 20 d 08' 30" N | 76 d 25' 4" W

²⁵ A naval representative noted that one option to conduct the glint/glare impact assessment is the Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories. The Navy has accepted the use of SGHAT in past assessments but does not mandate its use.

²⁶ SmartDG+ is a free online mapping tool designed to help with the zoning and siting of utility-scale solar and wind projects in the state. The program is jointly sponsored by the PPRP and the Maryland Energy Administration. For solar projects, the program can present a variety of useful information in map form, including: proximity to electric lines, current land cover/land use, protected areas, flood zones, airports, United States Department of Defense “no-go zones,” and county zoning. The tool is available for use by local governments, solar developers, and the general public. SmartDG+ can be accessed at: <https://dnr.maryland.gov/pprp/Pages/smartdg.aspx>.

²⁷ The tool can be found at: <https://stmarysmd.maps.arcgis.com/apps/webappviewer/index.html?id=f20f1de108f34157a8c8c47569f56500>.

²⁸ More information on Maryland’s Rural Legacy Program can be found at: <https://dnr.maryland.gov/land/Pages/RuralLegacy/home.aspx>.

²⁹ See § 7-306 of the Public Utilities Article of the Maryland Code and COMAR 20.50.10.

³⁰ HB 569/SB 407 of 2021.

³¹ Common causes for a panel failing include the microwires inside the panel breaking down and causing a short circuit or water breaching the sealant around the active part of a panel. Typical repairs include cracked panels, broken glass, or loose connections. See “How long do solar panels last?”, Solar Reviews, <https://www.solarreviews.com> (updated May 15, 2020).

³² See “What are the most efficient solar panels on the market? Solar panel cell efficiency explained”, Energy Sage, <https://news.energysage.com> (updated January 22, 2020).

³³ See “Governor’s Task Force on Renewable Energy Development and Siting Final Report” (August 14, 2020). The report can be found at: https://governor.maryland.gov/wp-content/uploads/2020/10/Final-Report_REDS-Task-Force.pdf.

³⁴ See “Considerations for a Clean and Renewable Energy Standard Presentation to the Maryland Commission on Climate Change Mitigation Working Group”, Clean Air Task Force and Center for Climate and Energy Solutions (September 2017).

³⁵ See *Id.*

³⁶ “Toxic Chemicals in Solar Panels”, Sciencing, <https://sciencing.com> (updated April 30, 2018).

³⁷ See “Life Cycle Assessment of an innovative recycling process for crystalline silicon photovoltaic panels”, Solar Energy Materials & Solar Cells, <https://www.journals.elsevier.com/solar-energy-materials-and-solar-cells> (April 6, 2016).

³⁸ See *Id.*

³⁹ See “Maryland Power Plants and the Environment, PPRP, <https://dnr.maryland.gov/pprp/Documents/CEIR-19-Full%20Document.pdf> (December 2017).

⁴⁰ See “Optimal Solar Siting for Maryland, A Pilot for Baltimore County and City”, Chesapeake Conservancy Conservation Innovation Center (October, 2020). The report can be downloaded at: <https://www.chesapeakeconservancy.org/wp-content/uploads/2020/10/CC-Report-Solar-Siting-Methodology-FINAL.pdf>.

⁴¹ See “Optimal Solar Siting for St. Mary’s County, Maryland”, Chesapeake Conservancy Conservation Innovation Center (March, 2021). The report can be downloaded at: <https://www.chesapeakeconservancy.org/wp-content/uploads/2021/04/CC-Report-St.-Marys-County-Solar-Siting-WEB.pdf>.

⁴² *Id.* at page 6.