Governor's Task Force on Renewable Energy Development and Siting
Interim Report

Prepared for:
Governor Larry Hogan

December 1, 2019

Maryland
OFFICE OF THE GOVERNOR

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Continuing his commitment to skilled environmental stewardship, Governor Larry Hogan established the Governor's Task Force on Renewable Energy Development and Siting, to develop consensus-based recommendations on the siting of new solar and wind energy projects in the state. Governor Hogan has pledged his strong support for clean and renewable energy solutions that are affordable, reliable, and produce jobs right here in Maryland.

The Task Force was designed and directed to provide proposals to the state and its units for evaluating, reviewing, and approving proposed solar and wind energy projects so as to expedite, standardize, and streamline the process. It was also directed to identify specific changes to state law, policies, procedures, regulations, resources, and tools that would incentivize responsible renewable energy development and siting.

While conducting its deliberations over the course of the last four months, the Task Force was directed to give careful consideration to efforts by Maryland counties and municipalities to site renewable energy projects through comprehensive plans, planning, and zoning ordinances, taxation, and other local laws, policies, procedures, or regulations; and consider related actions of the Critical Area Commission for the Chesapeake and Atlantic Coastal Bays, Department of Natural Resources Power Plant Research Program, and Public Service Commission.

The Task Force includes key stakeholders from state agencies along with representatives of Maryland's agriculture community, local government, as well as the solar and wind energy industry. It seeks to accelerate clean and renewable energy projects while minimizing and mitigating the impact on agriculturally or ecologically important, sensitive, and valuable areas.

Executive Order 01.01.2019.09 established a "Governor's Task Force on Renewable Energy Development and Siting." The Task Force was tasked to produce an interim report by Dec. 1, 2019 describing its initial work, and making preliminary recommendations for legislation in the 2020 session of the Maryland General Assembly. (Appendix 9)

The Task Force was directed to encourage the responsible siting of clean and renewable energy projects in Maryland by studying and making consensus-based recommendations for:

- Accelerating the siting of clean and renewable energy projects in commercial, developed, industrial, and public settings, including but not limited to brownfields, closed mines, landfills, parking lots, rights-of-ways, and rooftops;
- Minimizing the impact of clean and renewable energy projects sited on agriculturally or ecologically important, sensitive, or valuable areas by using design, mapping, operation, size, technology, and other parameters;
- Measures through which developers of clean and renewable energy projects can offset those projects' impacts by providing investments and resources to conservation banks, land trusts, open-space programs, nonprofits, trust funds, and other efforts to safeguard Maryland's farms, forests, waterways, wetlands, and similar agriculturally or ecologically sensitive areas;

- Recognizing and respecting local government legal authority, and private property rights; and,
- Avoiding locations that harm, inhibit, or otherwise adversely impact:
    - Agricultural, conservation, or preservation areas or easements;
    - Fertile, prime, or productive farms and fields;
    - Forest and park lands;
    - Sensitive ecological areas, shorelines, wetlands, or waterways; or
    - The State's cultural heritage, economy, environment, natural resources, or view-sheds.

The Task Force will continue its work through 2020, and plans to release a final report next summer.

LETTER FROM THE CHAIR

December 1, 2019

The Honorable Lawrence J. Hogan, Jr.
Governor, State of Maryland
State House
Annapolis, Maryland 21401

Dear Governor Hogan,

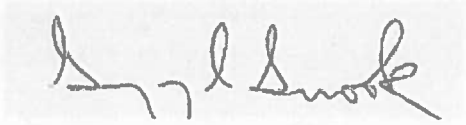
Thank you for this exciting opportunity to bring the State of Maryland into the next phase of renewable energy.

Being a western Maryland resident, I understand the challenges and opportunities of clean and renewable energy while balancing the role of local decision making in this process.

Our Task Force has had the privilege to work with localities, industry and state agencies, and have received great feedback from all levels of the administration and industry. I believe this draft will start the dialogue between partners to help the State of Maryland achieve its energy and environmental goals.

I look forward to continuing as chair over the coming months to develop a more detailed plan based on the feedback we receive.

Sincerely,



Gregory I. Snook
President and CEO of CHIEF
1 South Potomac Street
Hagerstown, MD 21740

MEMBERS

Members	Names
Maryland Department of Agriculture	Joe Bartenfelder
Maryland Department of Commerce	Ewing McDowell
Maryland Department of the Environment	Ben Grumbles
Maryland Department of Natural Resources	Jeannie Haddaway-Riccio
Maryland Department of Planning	Sandy Schrader
Maryland Department of Transportation	Earl Lewis
Maryland Energy Administration	Mary Beth Tung
Maryland Environmental Service	Roy McGrath
Public Service Commission	Joey Chen
Maryland Farm Bureau Representative	Billy Bishoff
Maryland Farm Bureau Representative	Janet Christensen-Lewis
MACo Representative	Leslie "Les" Knapp Jr.
MML Representative	Terry McGean
Solar Energy Industry	John Finnerty
Wind Energy Industry	Andrew Gohn

STAFF

Governor's Office	Allison Cordell
Governor's Office	Hannah Schaeffer
Governor's Office	Stephen Schatz
Maryland Energy Administration	Abigail Peryea
Maryland Energy Administration	David Comis

MEETINGS

To date, the Task Force has conducted five meetings (Sept. 6, Sept. 20, Oct. 3, Oct. 17, and Oct. 31, 2019) by conference call and participated in a tour of solar energy facilities (Nov. 15, 2019) in Anne Arundel and Queen Anne's counties. All calls and meetings were open to the public and adhered to state law, including the Open Meetings Act. Agendas and minutes can be accessed at governor.maryland.gov/energy-task-force/.

During the meetings, the Task Force was provided with information from state agencies and interested stakeholders, including the:

- Maryland Department of Natural Resources
  - Certificate of Public Convenience and Necessity (CPCN) Process
- Public Service Commission
  - CPCN Considerations
- Maryland Department of Transportation
  - Solar Power Master Services Agreement
- Critical Area Commission for the Chesapeake and Atlantic Coastal Bays
  - Draft Regulatory Proposal
- Maryland Municipal League (MML)
  - Municipal Concerns and Recommendations
- Maryland Association of Counties (MACo)
  - County Renewable Energy Siting
- Solar energy industry perspective
  - Solar Industry Perspective
- Wind energy industry perspective
  - Overview - Wind Energy in Maryland
- Siting visit and tour of three solar facilities
  - Wye Mills Solar,
  - Maryland Environmental Service (MES) headquarters, and
  - Annapolis Solar Park

Following the briefings and presentations, Task Force members were provided an opportunity to ask questions before members of the public were invited to comment. (Appendix 9)

Maryland's Important Agricultural Heritage

Agriculture has played an important role in Maryland since its founding in 1634. While tobacco then was the main crop, wheat, corn, fruits and vegetables also were farmed. By steadily supplying flour to the Continental Army, Maryland's Eastern Shore earned the title, "Breadbasket of the Revolution" during the American Revolution. Later, grains became the primary crops in Maryland, and were an important and valuable export for the state. Today, agriculture in Maryland is diverse, and includes not only crops, but also dairy and livestock, honey, horticulture and nurseries, poultry, and wineries and vineyards.

Agriculture is the largest commercial industry in Maryland, employing some 350,000 people, including nearly 6,000 full-time farmers and growers. Agriculture also remains the largest single land use in the state, encompassing nearly 2 million acres, or roughly 32% of total land area. While the majority of Maryland's farmland lies in the north central part of the state, and the Upper Eastern Shore, about 20 urban farms thrive in Baltimore City. In 2018, the top agricultural commodity sectors were poultry (broilers), grain, greenhouse and nursery, and dairy.

The Hogan administration remains committed to doing all it can to ensure that Maryland families continue to run healthy, profitable, and sustainable farms for generations to come. As the leading industry in Maryland, agriculture contributes $16 billion to our state's economy. Maryland's agricultural industry is an essential component of the fabric of our great state, and critical to our future economic and environmental success.

From beef and poultry to grain and produce, Maryland farmers are working harder than ever to meet the needs of consumers and others around the world. New technology has allowed farmers to meet this growing demand in a more economical, efficient and environmentally-friendly manner.

To enhance and preserve the agricultural community, Maryland has led the nation in permanently conserving and protecting farmland from development. The Maryland Agricultural Land Preservation Foundation (MALPF) was one of the first created in the United States, and has become one of the nation's leaders in agricultural land preservation. Its mission is to protect the best quality farms and build on existing preservation areas to increase the size of contiguous blocks of preserved farmland.

MALPF purchases agricultural preservation easements that forever restrict development on prime farmland and woodland, and has permanently preserved land in each of Maryland's 23 counties, representing a public investment of over $682 million. At the end of FY19, MALPF has purchased easements on a cumulative total of 2,347 properties, permanently preserving about 318,215 acres.

According to the 2016 report, "The Future of Sustainable Farming and Forestry in Maryland," commissioned by the Harry R. Hughes Center for Agro-Ecology, since the 1940s, "counties that experienced greater reductions in farm acres primarily due to development tended to also experience greater decreases in agricultural economic rank, based on comparative total sales of agricultural products among counties. These counties also tended to have more rural land

fragmented by large lot development; they also show the greatest shifts over that period of time away from livestock and toward nursery, greenhouse, horticulture, fruit and nuts, measured as percentages of agricultural sales from those respective products. These relationships between land in agriculture, fragmentation by large lot development, relative total agricultural sales, and shares of sales in large-scale livestock versus nursery, etc., appear likely to continue into the future. The future of poultry and grain on the Eastern Shore remains promising. Nursery and horticulture should continue to thrive in service to developed and developing landscapes. The future appears reasonably stable for the equine industry. And the "buy local" food movement holds the potential for growth in production, and direct and indirect local and regional marketing of fruits, nuts, vegetables, meats and value-added products. Projected land use changes, environmental regulations and food safety and health regulations will all play a role in defining what forms of agriculture will be sustainable in the future."[1]

The report recommends that zoning regulations have flexibility to give farmers the ability to produce and direct market value-added products (e.g., cucumbers into pickles, milk to cheese, grapes to wine, wheat to bread flour, timber to locally sourced lumber, etc.) and that the state law, regulations, and ordinances identify and address issues blocking expansion of on-farm value-added and direct market products arising from neighbor objections.

However, solar siting on farmland may have a substantial impact on the future of sustainable farming and harvesting in Maryland. A calculation of the amount of land potentially affected by the siting of new renewable energy projects (spurred on by the Renewable Portfolio Standard (RPS)) is highly affected by the assumptions used in the model. Using these assumptions, the Task Force values between 7,500 and 35,000 acres of land appear reasonable.

Calculation of New Land Requirements

A simple model was developed to estimate the amount of new land that would be required in order to meet the solar carveout requirement of the current RPS. In the following model output, assumptions (variables) are highlighted in yellow, data from PJM Interconnection Generator Attribute Tracking System (GATS) is highlighted in orange. Constants are highlighted in red, and results are highlighted in blue. An example of a model calculation is provided below.

61,750,000	Energy (Megawatt-hour (MWH)) used in state in 2030
14.50%	Solar Carveout
8,953,750	Solar energy (MWH) required
1,140	Solar capacity (MW) existing in MD as of Sept. 19, 2019
1,006	Ratio of energy to power (MWH/MW) for existing solar for year 2018

[1] Harry R. Hughes Center for Agro-Ecology. "The Future of Sustainable Farming and Forestry in Maryland." 2016. farmlandinfo.org/sites/default/files/AFT_Future_of_MD_Farming_Forestry2.pdf

1,146,840	Energy (MWH) from existing solar
7,806,910	Energy (MWH) required from new solar
75.00%	Ground mounted percentage (assumed)
5,855,183	Energy (MWH) from ground mounted solar
1,600	Energy to power (MWH-ac/MW-dc) conversion ratio for new solar (assumed)
3,659	Capacity (MW) required from new ground mounted solar
8	Acres per MW
29,276	Acres of panels required for new land based solar
90%	Agricultural land percentage (assumed)
26,348	Acres on agricultural land

The state energy use is projected by the various state utility companies and compiled by the Maryland Public Service Commission in Appendix 2 of it's Ten-Year Plans of Electric Companies in Maryland.[2] A value of 61,750,000 MWH was used as an estimate. Energy use could be lower than the estimate if energy efficiency and/or demand side management measures are effective. A lower number, such as 54,500,000 MWH could be used for a lower estimate.

The value of 1,140 MW of existing solar energy in Maryland was calculated using the listing of solar projects in the PJM GATS database. The value of output energy to solar capacity (1,006 MWH/MW) as similarly sourced from data derived from the PJM GATS database.

Using a threshold of 100 kW, approximately half of current solar capacity is made up of large scale solar arrays. Given the large increase in required solar it is expected that much of the new solar installations will be large scale ground installations. As such, the ground mounted percentage was assumed to be 75%. This is a guess of how the market will evolve, with larger and smaller percentages possible.

It is assumed that most new large scale solar systems will be south facing and tilted for optimum energy production. A fixed angle solar system will produce about 1431 MWH. If the system tracks the sun, higher values are possible. A value of 1600 MWH was used to reflect the assumption that most arrays would be single axis tracking. Smaller values would require solar larger arrays.

[2] psc.state.md.us/wp-content/uploads/Ten-Year-Plan-2018-2027-FINAL.pdf

It is widely recognized by the solar ground mounting community that it takes 5 acres of land to install one MW of solar. However, a review of recent large projects approved by the Maryland Public Service Commission leads to a larger estimate of 8 acres per MW.

While solar arrays may be placed on vacant or agricultural land, not all of it will be agricultural land. The model assumes 90% of the solar will go on agricultural land, but this is a guess of future siting.

High and low estimates were calculated using the following values:

High estimate (35,000 acres)

61,750,000	Energy (MWH) used in state in 2030
80%	Ground mounted percentage (assumed)
1,431	Energy to power (MWH-ac/MW-dc) conversion ratio for new solar (assumed)
8	Acres per MW
100%	Agricultural land percentage (assumed)
34,916	Acres on agricultural land

Low estimate (7,500 acres)

54,500,000	Energy (MWH) used in state in 2030
65%	Ground mounted percentage (assumed)
1,760	Energy to power (MWH-ac/MW-dc) conversion ratio for new solar (assumed)
5	Acres per MW
60%	Agricultural land percentage (assumed)
7,485	Acres on agricultural land

These numbers continue to be refined as the Task Force gathers additional data. Therefore, the Task Force has undertaken efforts to gather the best available practices utilized in municipalities, counties, and states across the country to develop the following recommendations to minimize impact to prime productive farmland.

Maryland's Clean Energy Goal

In May 2019, Governor Hogan outlined a bold strategy to set Maryland on a path to 100% clean electricity by 2040. The governor's record of skilled environmental stewardship includes fully funding Program Open Space and the Chesapeake and Atlantic Coastal Bays Trust Fund, along with pushing for and enacting clean air standards that are stronger than 48 other states, joining the U.S. Climate Alliance and serving as a leader in the Regional Greenhouse Gas Initiative. Governor Hogan has also committed a historic $5 billion toward Chesapeake Bay initiatives, fully funding restoration efforts for four years in a row.

Improving energy efficiency and increasing the availability of renewable energy options are an important part of Maryland's efforts. Innovative initiatives will provide millions of dollars in benefits to Marylanders, along with lower energy and maintenance costs, all while creating clean energy and green jobs opportunities.

PRELIMINARY RECOMMENDATIONS

To incentivize and accelerate siting in commercial, developed, industrial, and public settings, Task Force members discussed a variety of incentives, including financial (credits, grants, loans, rebates, etc.) and procedural (expedited review status for certain categories of project, etc.), or some combination thereof.

The Task Force is committed to continuing its work to determine siting-based solutions that would encourage renewable energy installations on existing structures, impervious surfaces or other properly planned and zoned areas. Development in these areas would benefit the state's energy and environmental goals while protecting our agricultural or natural resources, be it farmland, forests or wetlands. Some examples of more desirable siting locations could include covered landfills, brownfields, Voluntary Cleanup Program (VCP) sites, reclaimed mines or Superfund sites, land designated for renewable energy siting by local, county or state governments or "dual-use" properties such as rooftops or parking lots.

Aid Development in Desired Locations

To begin the process, the Task Force recommends developing incentives that could help lower installation costs for different types of solar energy to attain parity with the costs of open field installation.

Currently, the Maryland Department of Environment is updating a study to determine if specific degraded lands have the potential for solar energy generation. Information on these properties will aid developers in locating a desired location. (Appendix 1)

Further, incorporating these degraded properties with Maryland Department of Planning data on Priority Funding Areas, PJM Interconnection and utilities data on congestion and transmission lines into the Maryland Department of Natural Resources and the Maryland Energy Administration SmartDG + tool will aid both local communities and solar energy developers. These additional data layers should better match developers with sites.

Maximize Utilization of Rooftop and Parking Lots

The state should pursue initiatives to promote the development of rooftop solar or solar canopies for public facilities, commercial properties, properties in our densely-developed central corridor, and degraded sites like brownfields. Specifically, it is recommended that all new construction for state-owned buildings larger than 7,000 sq. feet include site considerations for solar canopies or rooftop solar. County and municipal governments may also take the lead by enacting similar goals for their publicly owned facilities.

State and local agencies are encouraged to evaluate parking lots and garages for solar development potential. These canopies can provide needed shade from the sun and protection from snow while generating renewable energy on a developed and existing footprint. Public private partnerships are also encouraged to meet the demands of customers and aid in the preferred siting locations for clean and renewable energy production.

State-Owned Properties

When considering solar installations on rooftops the ability of the roof to support the weight load of a solar photovoltaic system needs to be evaluated. Snow loads and wind loads need to be determined based on the location of the installation. Rack mounted solar collectors can increase wind load, particularly on a flat roof. Solar PV systems add approximately 4 pounds per square foot to the dead load of a roof, and approximately 45 pounds at specific attachment points. If a ballasted system is installed on a flat roof, it may add up to 10 pounds per square foot to the roof's dead load[3]. To accelerate solar siting on rooftops, it is recommended that solar installations be considered on all new buildings built by the State of Maryland and local governments that are over 7,000 sq. feet and where possible, considered on existing public structures.

Commercial, Industrial, and Residential Properties

To incentivize companies to accelerate solar on commercial and industrial sites, the Maryland Energy Administration (MEA) should begin a program that will certify projects as Maryland Green Energy Certified if they are contributing to renewable energy production in "best use" areas such as rooftops, parking lots, and degraded lands in Maryland. This is similar to Maryland Department of Natural Resources' Clean Marina Initiative. This initiative recognizes and promotes marinas, boatyards, and yacht clubs that meet requirements and voluntarily adopt pollution prevention practices. Marylanders and visitors are encouraged to patronize certified Clean Marinas and to adopt clean boating habits. Similarly, the Maryland Green Energy Certification will recognize sound environmental practices and encourage development of preferable sites. In partnership with Maryland Departments of Environment, Natural Resources, Transportation, Agriculture, Planning, and Commerce, the recognition program will promote best practices and publicize awards that meet the state's renewable energy goals on desired locations.

To further incentivize solar on rooftops and parking lots in counties where personal property tax exists, counties may desire to exempt a certain percentage of personal property tax if the improvement was for renewable energy generation. For example, if the exemption was to be 5%, and the property is worth $200,000 and the rooftop solar installation increases the total value of the property to $210,000, the increase of the property ($10,000) could then be exempt from tax. This creates an incentive to invest in renewable energy, creating a value add for the property owner. Therefore, as the value of the property increases, the subsequent tax increase on the property does not also increase. This creates an incentive to property owners in the 16 counties and Baltimore City that have personal property tax.

---

[3] SunShot: Rooftop Solar Ready Construction Guidelines, U.S. Department of Energy solsmart.org/media/OKI_RooftopSolarReadyConstructionGuidelines.pdf

Currently, agricultural customers, nonprofit organizations and municipal governments are allowed to aggregate net meter. Maryland's net-metering law has been expanded several times since it was originally enacted in 1997. Residents, businesses, schools or government entities with systems that generate electricity using solar, wind, biomass, fuel cell, closed-conduit hydroelectric, and micro-combined heat and power resources are eligible for net metering. Net metering is available statewide until the aggregate capacity of all net-metered systems reaches 1,500 MW. As of 2018, over 50% of this cap has been reached. The Task Force recommends further discussion on when an expansion of the cap may be necessary.

Incentivize Reclamation of Low Value Lands

For properties participating in the Maryland Department of the Environment's Voluntary Cleanup Program, the Task Force recommends eliminating any unnecessary financial barriers (e.g., fees or surcharges) for entities that utilize the land for clean energy development. (Appendix 2)

The Task Force recommends a clean energy and reclamation tax exemption to accelerate and incentivize solar development and siting on brownfields, degraded lands, and rights-of-ways. This will provide encouragement to developers interested in partnering with counties, municipalities, the state, or federal partners to locate in preferred areas such as rooftops, parking lots, man-made sediment and retention ponds, coal ash ponds, closed mining properties, and landfills.

Maryland's Clean Energy and Reclamation Tax Exemption will incentivize reclamation, minimize pollutants on affected sites, and aid in clean energy production on desired sites. This proposed tax exemption will encourage developers who utilize a public private partnership to clean up existing contaminated sites while generating renewable energy production on the degraded land site. Combining this tax exemption with the existing Brownfields Revitalization Incentive Program will further promote sustainable siting of solar projects.

Promote Agricultural Use on Agricultural Lands

If a utility-scale solar energy project is sited on agricultural land, the company/developer has a number of options available to them to reduce their "footprint."

Developers should ensure a natural landscape barrier or buffer is planted and maintained, that it is high enough to conceal all electronic equipment, be it photovoltaic panels, inverters, substations, etc. and dense enough that it surrounds the entire development. Developers could also designate areas of their lease or property for urban gardening and/or pollinator habitat, or retain some, if not all, of the land as active agricultural land. This could be accomplished using a raised photovoltaic system so active farming (e.g. livestock) can occur underneath.

The Task Force recommends further discussion on potential recommendations if these lands are not designed, constructed or maintained properly. Failure to abide by local and state laws and

recommendations could jeopardize future projects by a specific developer or subject the developer to fines and penalties. Better communication between the local government and Public Service Commission is recommended.

Additionally, the Maryland Energy Administration's existing residential and commercial rebate programs can provide funding for solar on agricultural properties. The Commercial, Industrial, and Agricultural Program (CI&A) provides incentives for energy efficiency improvements to agricultural properties. These programs promote renewable energy development or energy efficiency programs designed for Maryland farmers and growers. Continuing to educate the public on how the landowner can utilize this program to bring renewable energy to the farm may assuage community concerns that solar energy developers are consuming agriculture lands without proper regard for the community or broader industry.

Address County and Municipality Concerns

In order to assure that community views and voices are heard throughout the development and construction of renewable energy projects, be it solar or wind, the Maryland Association of Counties and the Maryland Municipal League recommends that local jurisdictions affected by renewable energy project be automatically listed as "interested persons" in the filing before the Public Service Commission. This designation could be easily transferred to "intervenor" status upon request. (Appendix 3)

The Task Force recommends if, for any reason, projects receiving Public Service Commission permission or approval of Renewable Energy Credits (RECs), have a material change such as in the capacity of the project, turbine model, design of the foundation or support structure, the geographical coordinates including latitude, longitude, and vertical specifications, the project commercial operation date, or decommissioning plan, the PSC have explicit authority to evaluate and determine if any action is necessary to provide public comment on the change to the qualified project. (Appendix 4)

Coordinate Maryland Renewable Energy Projects

The Maryland Department of Natural Resources Power Plant Research Program, Maryland Energy Administration, and other appropriate state agencies should lead a coordinated effort to provide additional educational and technical assistance to county and local governments as the counties and municipalities review renewable energy projects in their planning and zoning processes. The state may also consider improving the review and approval process for projects that work cooperatively with local communities and governments. Currently, the Maryland Energy Administration is in the process of expanding outreach to municipalities and plans to utilize the Maryland Municipal League and the Maryland Association of Counties to regularly inform their members on the services it can provide.

Additional information on the renewable energy assets, projects in the pipeline, and congestion and transmission information may help developers make better informed decisions when selecting siting locations. (Appendix 5)

Education materials are also recommended to assist county governments in concerns that address grid capacity and connection issues for renewable energy projects, as well as best practices, to provide examples of county zoning and siting projects. (Appendix 6)

Task Force members believe it is valuable for the Public Service Commission to review the Certificate of Public Convenience and Necessity process to identify strengths and weaknesses in an effort to provide better responsiveness and transparency. For example, for generation projects that plan to sell into PJM, an applicant is required to submit certain agreements and studies. Steps can be taken to increase an applicant's awareness of Public Service Commission requirements and likely the Department of Natural Resources Power Plant Research Program's recommendations in advance of submission to the state. This could reduce paperwork and increase certainty for industry. Defining a user-friendly standard of review of projects would help communities and developers alike. (Appendix 7)

Encourage Grid Resilience

To increase reliability, and to incentivize public safety and renewable energy contributions by the public sector, additional microgrid deployment and storage solutions are advisable. Use of energy storage to increase reliability by lowering dependence on the grid during peak energy consumption times is the future and the state needs to develop a streamlined standard to review and approve these projects. (Appendix 8)

ADDITIONAL INFORMATION

Appendix 1: Incentivize Desired Renewable Energy Siting

Maryland desires to incentivize solutions that address the state's Renewable Energy Development and Siting Task Force goals. Through the governor's executive order, the state's objective in creating recommendations is to protect prime farmland and agricultural reserves, and to encourage the dual-use of certain other lands.

In many cases, existing farmland can provide the lowest cost solution for a utility size solar array. The plot is large, the land is flat, there is rarely shading, and long term land leases may be available. Solutions for less "desirable" land may involve irregular land shapes, environmental concerns, and land modification restrictions, leading to higher installation costs.

The state and counties may establish a series of incentives and disincentives to drive future renewable energy development to certain classes of sites. These incentives may be monetary (grants, loans, rebates, state or local tax credits, etc.) or procedural (expedited review status for certain categories of project, etc.), or some combination thereof. A possible purpose of these incentives/disincentives may be to attain cost parity between installations on prime farmland and installations on other locations.

Non-desired siting locations would include prime farmland, wetlands, and forests. Desired siting locations would include covered landfills, brownfields, lands cleaned up with final signoff by the VCP program, reclaimed mines, reclaimed superfund sites, land designated for the renewable energy technology in the Authority Having Jurisdiction's zoning regulations and guidelines, state or local government lands made available for this purpose and dual-use property over impervious surfaces, such as building rooftops or parking lots.

Recommendation: Complete the current study being undertaken by the Maryland Department of the Environment (MDE), looking at degraded lands that have the potential for solar energy generation.

Recommendation: Currently, Maryland Energy Administration (MEA) incentives focus on residential, commercial, canopy and resiliency hub solar as well as incentives for low and moderate income (LMI) solar. The Task Force recommends MEA continue its review of its program and best practices in other states for siting solar on preferred land.

Recommendation: Work with state, local and federal agencies in identifying impervious surfaces and underused and open lands, under their control, that have solar siting potential. This would include lands occupied by the U.S. Department of Defense.

Solar Siting Category Descriptions

- **Preferred Lands**
  - Characterized by existing impervious surfaces common in urban development. These areas are most desirable for siting solar because they do not introduce any additional direct land disturbance that may affect ecosystem services.
  - *Anderson Code Classification Examples*: Residential (1100), Commercial/Services (1200), Industrial (1300), Transportation, Communication, Utilities (1400), Altered Lands—such as landfills and brownfields (7400), etc.
- **Not-Preferred Lands**
  - Characterized as natural lands that the Department sets out to protect and preserve.
  - *Anderson Code Classification Examples:* Agricultural/cropland (2100), Forests (4000), Wetlands (6000), etc.
- **Indeterminate Lands**
  - Neither Preferred or Not-Preferred; Additional information is necessary to assess the viability of siting solar in these areas
  - *Anderson Code Classification Examples:* Cemeteries (1710), Athletic Fields (1804), Stadiums, Theatres, Cultural Centers and Zoos (1810), various Rights-of-Way (1461-1463), Natural and Artificial Lakes//Reservoirs (5200, 5300), etc.

Appendix 2: Use of the Voluntary Cleanup Program

The VCP was established by the state legislature in 1997, and is administered by MDE's Land and Materials Administration's Land Restoration Program to provide state oversight for the voluntary cleanup of properties contaminated with hazardous substances. The goal of the program is to increase the number of sites cleaned by streamlining the cleanup process while ensuring compliance with existing environmental regulations.

The Brownfields Revitalization Incentive Program was established in February 1997 as part of Maryland's Smart Growth policy. This program is intended to promote economic development, especially in distressed urban areas, by identifying and redeploying underutilized properties. Reusing real property makes efficient use of existing infrastructure while providing an alternative to developing open space that contributes to urban sprawl. The term `brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence of a hazardous substance, pollutant, or contaminant.

Restored land may provide favorable characteristics for the siting of a solar array. However, a solar developer will want assurance that they do not pick up unknown, and potentially unlimited, environmental responsibility from the purchase of restored land. VCP provides this assurance. In essence, the program consists of an initial review, a phase one review (an Environmental Site Assessment meeting the requirements of ASTM 1527-13), and a phase two consisting of specific sampling and analysis identified in the phase one assessment. The initial application fee is $6,000, while the phase one assessment may cost up to $10,000. The phase two costs are highly dependent on the results of the phase one study. A final fee of $2,000 is assessed. As such, participation in the VCP program is likely to cost at least $18,000, plus the cost of the phase two sampling and assessment.

Use of the VCP program benefits the state by ensuring "questionable land" is analyzed for environmental hazards before being converted to another use, and helps the solar developer through protection from environmental liability for hazards he/she did not cause.

Recommendation: For properties participating in MDE's VCP program, eliminate 100% of the application and ending fees, 100% of the phase one Environmental Site Assessment

costs, and 100% of phase two sampling and analysis costs if the site plan includes production of clean energy.

Recommendation: Offer tax credits for clean energy development for individuals and entities that utilize 1) brownfields or sites completing review, 2) sites receiving a VCP signoff, 3) closed landfill sites, or 4) dual purpose sites that beneficially reuse existing infrastructure, corresponding ponds, and other impervious surfaces.

Appendix 3: Local Jurisdictions as Interested. Parties

The CPCN process is used to evaluate all solar energy generation projects with output larger than 2 MW, as well as various transmission lines. At present, affected counties are afforded notice of a CPCN proceeding, but are not automatically designated as a party to the proceedings. Designation as a party would ensure the county received a copy of all filings in a timely manner, and could speak at any legal proceeding, even if an initial review of the case did not reveal a compelling county interest.

Under Public Utilities Article §7-207(e)(3), the Maryland Public Service Commission must consider local zoning considerations and concerns, but is not obligated to rule in their favor.[4]

Recommendation: In order to assure that local government views are available at all levels of the CPCN review process, where a utility-scale generation or transmission project is proposed, local jurisdictions (counties and affected cities) should be required to be automatically listed as "interested persons" to the case and should be granted status as an intervenor upon request.

Appendix 4: Monitor Viewshed Changes

The Public Service Commission considers inputs from counties, municipalities, and residents when considering the approval of a CPCN for an energy generation or energy transmission facility. One of the factors that may be of concern is viewshed, i.e., the visibility of the facility from the surrounding countryside. While viewshed may be affected by surrounding barriers or by camouflage, larger and taller structures normally result in a larger viewshed concern.

In some cases, the PSC can provide requirements in the CPCN that addresses viewshed. In other cases the PSC has no such authority, but may have influence through the authorization of RECs (such as Solar RECs or Offshore Wind RECs).

Counties, cities, and local residents who may be concerned by a change in the capacity of the project, in turbine model, design of the foundation or support structure, geographical coordinates, the commercial operation date, or the decommissioning plan may desire an opportunity to address their concerns to the PSC as there may be new concerns from the affected residents.

---

[4] Board of County Commissioners of Washington County, Maryland v. Perennial Solar, LLC, No. 66, September Term, 2018, Opinion by Booth, J.

Recommendation: Update the Public Utility Article to authorize, the PSC to conduct an investigation to evaluate any material change to the qualified project reported to the Commission including but not limited to the capacity of the project, the turbine model, the design of the foundation or support structure, the geographical coordinates including latitude, longitude, and vertical specifications, the project commercial operation date, or the decommissioning plan. This may initiate a subsequent public hearing to consider new concerns raised when a project has a material change. The hearing would only address new concerns and would not be required to revisit concerns already addressed.

Appendix 5: Provide Education for Renewable Energy Developers

Successful project development requires an understanding of many factors that affect the siting of a renewable energy project. To aid the developer in this task, the Maryland Department of Natural Resources Power Plant Research Program (PPRP) and the Maryland Energy Administration have teamed up to develop and make available the SmartDG+ tool. This tool provides information for the location of power lines, historical areas, wetlands, and many other factors that are considered when selecting a site for a renewable energy project. Providing data from Smart DG+ helps the PSC ensure all applicable concerns have been evaluated.

Many developers have never worked with county governments on the siting of large land-based solar arrays. While the PSC may have the right to preempt a county zoning decision, they take strong consideration of recommendations from the county government. As such, developers should work closely with county officials when siting renewable energy projects.

Recommendation: For MEA and PPRP to host educational sessions to provide developers and interested persons instructional website videos demonstrating how to use the SmartDG+ tool. The Maryland Department of Planning is also recommended to provide educational expertise to the county governments explaining how local zoning can assist the PSC in the CPCN process.

Appendix 6: Provide Education to County Governments

County governments are very involved in the siting, zoning and permitting of solar arrays. Arrays with a capacity of less than 2 MW are solely within the zoning authority of the county. While arrays with a capacity of greater than 2 MW are under the control of the PSC, the PSC strongly considers county input when determining conditions for a CPCN.

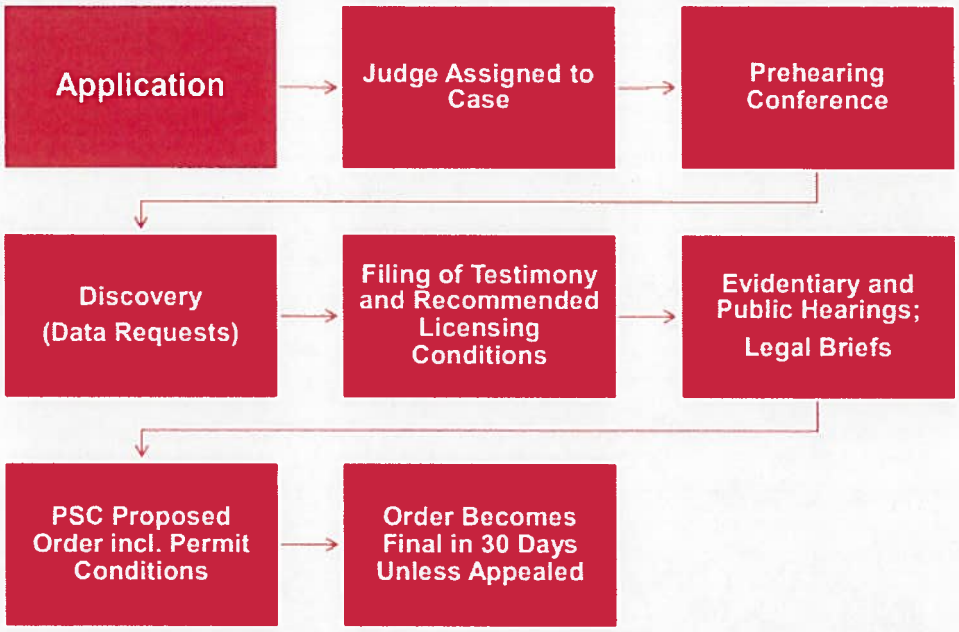
County government are encouraged to utilize SmartDG+ when evaluating solar project applications. Similarly, county government may wish to require the developer to submit screenshots from this tool to demonstrate compliance with various zoning requirements.

Many solar developers do not have experience working with county officials for the approval of solar projects. A listing of best practices associated with zoning, permitting and siting would help new developers avoid pitfalls and speed the approval of projects.

Recommendation: For PPRP to provide educational materials demonstrating the use and value of the Smart DG+ tool for county zoning and permitting officials. Each county is also recommended to provide the Maryland Department of Planning with information so that GIS layers can be uploaded to address county specific renewable energy zoning and permitting issues into the siting tool.

Appendix 7: Conduct a review of the CPCN Process

The current CPCN process is shown in the diagram below:



[5]

Public Utilities Article §7-207(e) lists the items the Public Service Commission is required to give due consideration to before deciding on an application for a CPCN. PPRP staff, in consultation with their assistant attorney general, interpret that PPRP has latitude in the shape its assessments take when providing them for the PSC's "due consideration," as long as they address the core statutory list.

Recommendation: Continue working with the PSC to review the CPCN process in order to determine whether and where the process could be streamlined. This may help reduce the need for extensive discovery and reduce review time.

Recommendation: Create recommendations for mitigation or planting requirements if farmland or forest land that is leased and developed for solar arrays is no longer consistent with the intended zoned use. Utilizing cover crops or grazing in the project would allow the land to be considered still in agricultural use.

---

[5] Maryland CPCN Considerations: Maryland Public Service Commission. PowerPoint Presentation governor.maryland.gov/wp-content/uploads/2019/09/PSC-CPCN-Considerations-Presentation.pdf

Appendix 8: Microgrids Program Development

A microgrid is a collection of interconnected loads, generation assets, and advanced control equipment installed across a defined geographic area that is capable of disconnecting from the macrogrid (the utility scale electric distribution system) and operating independently[6].

MEA currently offers the following programs that assist in the commercial development of microgrids:

- Combined Heat and Power Grant Program
- Commercial Clean Energy Rebate Program
- Parking Lot Solar PV Canopy with EV Charger Grant Program
- Community Solar Grant Programs
- Resiliency Hub Grant Program

Example: Montgomery County has installed two microgrids at two critical facilities: the Public Safety Headquarters building in Gaithersburg, and the Montgomery County Correctional Facility in Boyds. At the Public Safety Headquarters, a 2 MW solar canopy was combined with a 865 kW Combined Heat and Power (CHP) system to allow the building to operate while disconnected from the electric grid. The CHP system produces hot water to heat the building, and domestic hot water for use by an absorption chiller that helps support the current building chillers. The solar system helps provide energy to the level three EV charger and three level two EV chargers.

In most cases, microgrids will combine advanced breakers, energy storage, variable renewable energy sources (wind/solar), and dispatchable energy sources, such as fossil fuel generators to allow specified electrical circuits to separate and operate independent from the grid, and then to reconnect to the grid. In some cases, the microgrid will provide full electrical capacity to all loads, but in other cases, the microgrid will only power certain electrical circuits that are critical to the mission of the microgrid. Examples of a microgrid may be a hospital complex, a command and control building critical for public safety, or a shopping complex to provide necessary emergency needs to the community, such as a gas station, pharmacy or grocery store.

Microgrids provide resiliency to a community, allowing emergency services to address the situation while reducing the time for the community to recover from the casualty. Due to the requirement for additional breakers, generators, energy storage, and grid controls, microgrids are not inexpensive. In circumstances where the formation of a microgrid will provide needed resiliency to a community, the utility, state, county, city, and local businesses should work together to identify the loads, the generation, as well as the means to operate and appropriate the

[6] Maryland Resiliency Through Microgrids Task Force Report.
energy.maryland.gov/Documents/MarylandResiliencyThroughMicrogridsTaskForceReport_000.pdf

costs of the system. The energy generation must be within the boundaries of the microgrid, hence renewable energy siting is directly connected to the location of the microgrid.

To date, three public service microgrid proposals have been considered by the Public Service Commission, but none have been approved.

Recommendation: Continue discussions with the PSC, investor owned utilities, MEA, and city and county representatives to discuss lessons learned from the microgrid submissions and rejections, and attempt to develop a generic microgrid proposal that would be accepted. Consider a study to determine options for microgrid development addressing regulatory and financial considerations.

Recommendation: MEA has multiple programs that fund resiliency measures for critical facilities. These programs include Clean Energy Rebates, the Parking Lot Solar PV Canopy with EV Charger Grant Program, Resiliency Hubs, and Combined Heat and Power. The state also has an existing storage tax credit as well as energy efficiency programs. Therefore, the Task Force recommends the MEA continue the review of programs for synergies that could benefit facility level microgrids.

Appendix 9: Executive Order, Meeting Minutes, and Presentations

The State of Maryland

Executive Department

EXECUTIVE ORDER
01.01.2019.09

Governor's Task Force on Renewable Energy Development and Siting

WHEREAS, Maryland's communities, economies, and ecosystems are increasingly under threat from the effects of climate change;

WHEREAS, The State participates in the Multi-State Zero-Emission Vehicle Task Force, the Regional Greenhouse Gas Initiative, the Transportation and Climate Initiative, and the U.S. Climate Alliance, and strives to meet aggressive state and regional climate, energy, and greenhouse gas emissions goals;

WHEREAS, The State has significantly reduced greenhouse gas emissions, and must continue to accelerate those efforts by using greater amounts of homegrown clean and renewable energy resources, including solar and wind;

WHEREAS, Efforts are underway to meet ambitious goals to reduce greenhouse gas emissions by 40 percent by 2030, and to achieve 100-percent clean electricity by 2040;

WHEREAS, The State must work aggressively to diversify, expand, and sustain its clean and renewable energy capabilities while balancing, enhancing, and safeguarding Maryland's cultural heritage, economy, environment, natural resources, and view-sheds;

WHEREAS, Unwise siting of renewable energy projects could jeopardize Maryland's farms, forests, waterways, and wetlands; and

WHEREAS, Review and evaluation of the siting of clean and renewable energy projects is needed to ensure an affordable, reliable, resilient, and safe supply of electricity;

NOW, THEREFORE I, LAWRENCE J. HOGAN, JR., GOVERNOR OF THE STATE OF MARYLAND, BY VIRTUE OF THE AUTHORITY VESTED IN ME BY THE CONSTITUTION AND LAWS OF MARYLAND, HEREBY PROCLAIM THE FOLLOWING EXECUTIVE ORDER, EFFECTIVE IMMEDIATELY:

1. There is a Governor's Task Force on Renewable Energy Development and Siting (the "Task Force").

2. Membership.

   A. The Task Force shall consist of the following members:

      i. The Secretary of Agriculture, or the Secretary's designee;

      ii. The Secretary of Commerce, or the Secretary's designee;

      iii. The Secretary of the Environment, or the Secretary's designee;

      iv. The Secretary of Natural Resources, or the Secretary's designee;

      v. The Secretary of Planning, or the Secretary's designee;

      vi. The Secretary of Transportation, or the Secretary's designee; and

      vii. The Director of the Maryland Energy Administration, or the Director's designee.

   B. The following shall be invited to be, and shall be upon acceptance, members of the Task Force:

      i. The Director of the Maryland Environmental Service, or the Director's designee;

      ii. The Chairman of the Public Service Commission, or the Chairman's designee;

      iii. Two representatives of Maryland's agriculture community, recommended by the Maryland Farm Bureau;

      iv. One representative of county government, recommended by the Maryland Association of Counties;

v. One representative of municipal government, recommended by the Maryland Municipal League;

vi. One representative of the solar energy industry; and

vii. One representative of the wind energy industry.

C. The Governor shall appoint a chair of the Task Force.

D. Members serve at the pleasure of the Governor.

E. Any vacancy shall be filled in the same manner as the initial appointment.

3. The Office of the Governor shall provide the Task Force with staff as necessary and feasible.

4. The Task Force shall:

A. To encourage the responsible siting of clean and renewable energy projects in Maryland, study and make consensus-based recommendations for:

i. Accelerating the siting of clean and renewable energy projects in commercial, developed, industrial, and public settings, including but not limited to brownfields, closed mines, landfills, parking lots, rights-of-ways, and rooftops;

ii. Minimizing the impact of clean and renewable energy projects sited on agriculturally or ecologically important, sensitive, or valuable areas by using design, mapping, operation, size, technology, and other parameters;

iii. Measures through which developers of clean and renewable energy projects can offset those projects' impacts by providing investments and resources to conservation banks, land trusts, open-space programs, nonprofits, trust funds, and other efforts to safeguard Maryland's farms, forests, waterways, wetlands, and similar agriculturally or ecologically sensitive areas;

iv. Recognizing and respecting local government legal authority, and private property rights; and

v. Avoiding locations that harm, inhibit, or otherwise adversely impact:

a. Agricultural, conservation, or preservation areas or easements;

b. Fertile, prime, or productive farms and fields;

c. Forest and park lands;

d. Sensitive ecological areas, shorelines, wetlands, or waterways; or

e. The State's cultural heritage, economy, environment, natural resources, or view-sheds;

B. Within its recommendations, provide detailed proposals to the State and its units for evaluating, reviewing, and approving proposed solar and wind energy projects so as to expedite, standardize, and streamline the process;

C. Identify specific changes to State law, policies, procedures, regulations, resources, and tools that would incentivize responsible renewable energy development and siting; and

D. Give careful consideration to:

i. Efforts by Maryland counties and municipalities to site renewable energy projects through comprehensive plans, planning, and zoning ordinances, taxation, and other local laws, policies, procedures, or regulations; and

ii. Related actions of the Critical Area Commission for the Chesapeake and Atlantic Coastal Bays, Power Plant Research Program, and Public Service Commission.

5. The Task Force shall, at such times and places as it deems appropriate and necessary, hold publicly announced meetings that are accessible and open to the general public in accordance with the Open Meetings Act and other applicable laws and regulations.

6. The Task Force may seek consultation with external parties and stakeholders as it deems necessary.

7. The Task Force shall submit to the Governor:

A. By December 1, 2019, an interim report describing its initial work and making preliminary recommendations for legislation in the 2020 session of the General Assembly of Maryland; and

B. Within one year of the date of this Order, a final report detailing its recommendations on responsible renewable energy development and siting.

GIVEN Under My Hand and the Great Seal of the State of Maryland, in the City of Annapolis, this 14th day of August, 2019.

Lawrence J. Hogan, Jr.
Governor

ATTEST:

John C. Wobensmith
Secretary of State

Renewable Energy Development and Siting Task Force
Sept. 6, 2019
2PM

Agenda

- Welcome
  - Welcome and attendance taken by Greg Snook

- From the Chair
  - Snook went over the mission of the task force.
  - Snook introduced the Maryland Department of Natural Resources (DNR) Power Plant Research Program (PPRP) and David Tancabel, who then reviewed the Certificate of Public Convenience (CPCN) process.

- Presentation
  - Tancabel went through the presentation, while taking questions.
    - PPRP explained that one of the main questions that they are asked is, "How much land is needed to meet the solar carve out?"
      - PPRP estimates ~25,000 acres.
        - This figure does not include rooftop solar.
      - A range of 25,000-43,000 acres were discussed
  - PPRP explained smart siting, which gives developers an idea of where to put projects that reach the nexus of renewable resource availability, infrastructure proximity, and land suitability.
    - In 2015, in partnership with MEA, PPRP created the SmartDG+ program, which is a free, online GIS based tool.
      - PPRP is happy to demo the tool for anybody.
        - Les Knapp said that the Maryland Association of Counties (MACo) has been working with PPRP to provide demos.
  - Jason Dubow wanted to know more about the designation and identification of agricultural land with high value soils.
    - Tancabel said that in their project assessment report, if it's on specific soil it gets noted on the report, which goes to the Public Service Commission (PSC).
  - Snook asked how long it takes to go through the CPCN process and if it is the same process for each county.
    - Tancabel said it depends on the preparation of the developer. It could take 1+ years if developers need to keep submitting data.
  - Stephen Schatz asked if there is any conversation between the Maryland Department of Planning (MDP) and PPRP about including priority funding or preservation areas in SmartDG+.
    - PPRP explained that the next step is to put the priority preservation areas for those counties that have adopted them into the SmartDG+ tool.

- Other Business
  - Snook said he is looking at hosting another call in the next 1-2 weeks.

  - Lewis brought up the need for more information on brownfields and landfills.

        - Shawn Seaman said they do have a layer in SmartDG+ with brownfield and landfill data that comes directly from the Maryland Department of the Environment, but they were in the process of updating the information.
            - Secretary Grumbles said he absolutely wants to work on that front to get up-to-date numbers on the brownfields and landfills.

    - Billy Bishoff mentioned rooftop and parking lot solar, along with incentivizing the use of brownfields.

    - Terry McGean asked what counts towards the 14.5% and if has to be utility scale.
        - PPRP said rooftop still contributes to the in-state solar carve out.

- Adjournment
    - Snook adjourned the call at 3:09PM.

Attendees

- Abigail Peryea, MEA
- Adam Gruzs, MDP
- Adrienne Noel, Maryland Environmental Service (MES)
- Allison Cordell, Governor 's Office
- April King, MES
- Ben Grumbles, MDE
- Billy Bishoff, Maryland Farm Bureau representative
- Cassie Shirk, Maryland Department of Agriculture (MDA)
- David Comis, Maryland Energy Administration (MEA)
- David Tancabel, PPRP, DNR
- Devon Dodson, MDE
- Ewing McDowell, Maryland Department of Commerce (Commerce)
- Greg Snook, Chair
- Hannah Schaeffer, Governor's Office
- Helen Stewart, PPRP, DNR
- James McKitrick, DNR
- Janet Christensen-Lewis, Maryland Farm Bureau representative
- Jason Dubow, MDP
- Joey Chen, PSC
- Julie Oberg, MDA
- Kyle McColgan, Commerce
- Les Knapp, MACo representative
- Mary Beth Tung, MEA
- Roy McGrath, MES
- Ryan Opsal, MEA
- Sandra Schrader, MDP
- Shawn Seaman, PPRP, DNR
- Stephen Schatz, Governor's Office
- Terry McGean, Maryland Municipal League representative

The Maryland Certificate of Public Convenience and Necessity (CPCN) Process

Maryland Department of Natural Resources
Power Plant Research Program

Presentation Objectives

1. Explain the CPCN process and PPRP's coordinating role
2. Review renewable energy goals and land use impacts
3. Introduce the DNR/MEA SmartDG+ product

Required Permits and Approvals

MARYLAND DEPARTMENT OF NATURAL RESOURCES

To construct and operate a new power plant in Maryland (>2 MW) or a transmission line (>69 kV) a person must obtain:

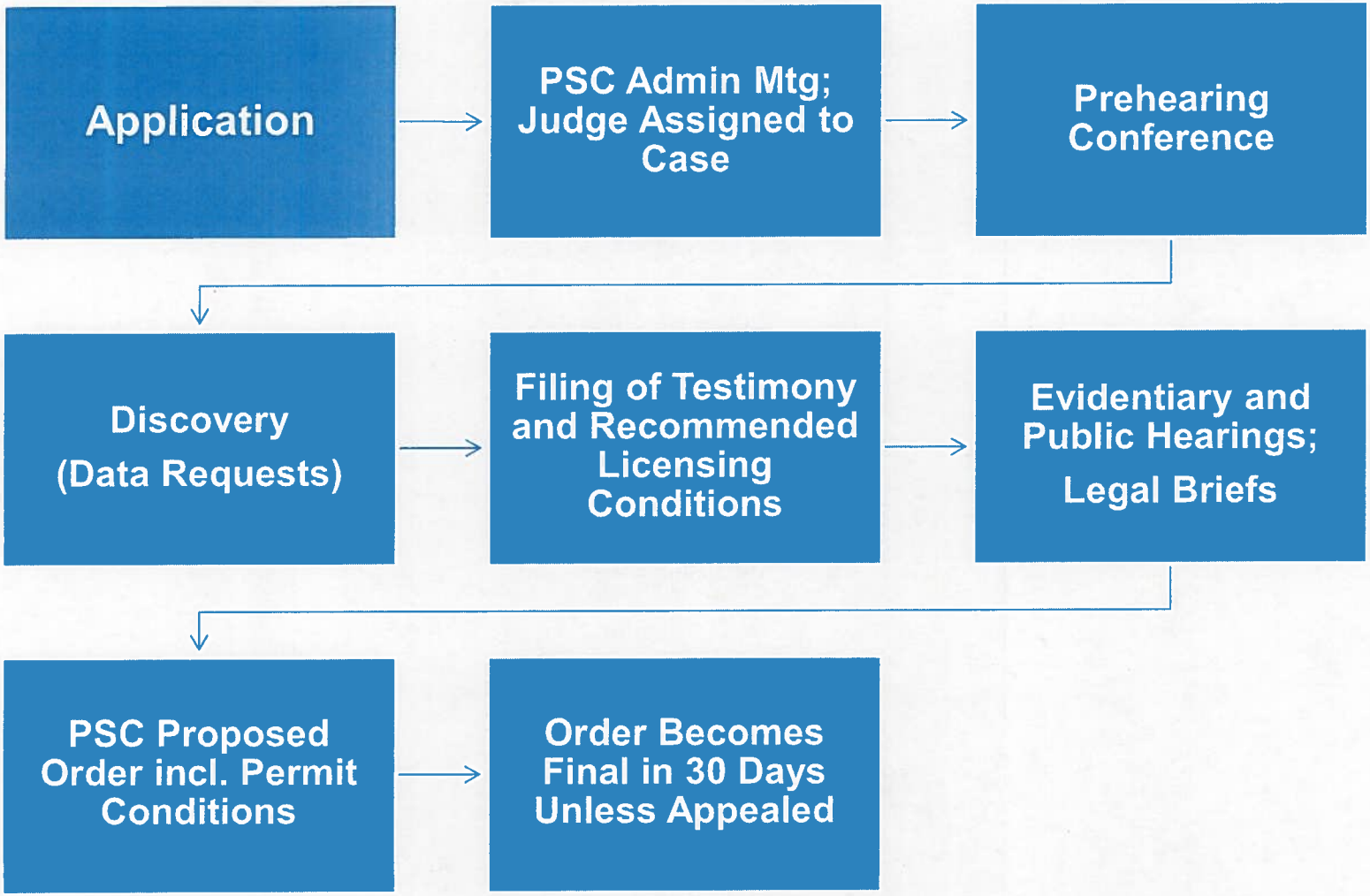
- PJM Interconnection Agreement
- Public Service Commission Certificate of Public Need and Necessity (CPCN)
- Other State and Federal Permits
- County Permits

CPCN Adjudicatory Parties

MARYLAND DEPARTMENT OF NATURAL RESOURCES

- The Applicant
- Power Plant Research Program
- Office of People's Counsel
- PSC Technical Staff
- Others

CPCN Process



PPRP Coordinates With 7 State Agencies

Maryland
Energy
Administration

Maryland
Department of
the Environment

Coordinated review concludes with a joint secretarial letter to the Public Service Commission, transmitting

- Project Assessment Report
- Recommended Licensing Conditions for the CPCN
- Testimony

Impact Assessment

MARYLAND DEPARTMENT OF NATURAL RESOURCES

How does the design, construction and operation of power plants and transmission lines impact Maryland's environmental, socioeconomic and cultural resources?

Impact Assessment

MARYLAND DEPARTMENT OF NATURAL RESOURCES

- Biological impacts to water quality, wetlands, forests, wildlife and aquatic resources
- Economic and fiscal impacts, including job creation and protecting prime farmland
- Transportation impacts during construction, and after construction to passing cars and planes
- Visual impacts to neighboring properties
- Impacts to cultural, historical and aesthetic sites
- Water and sewer utility impacts
- Fire safety considerations

PSC Determination

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Public Utilities Articles § 7-207(e): The PSC must give due consideration to the following:

(1) The recommendation of the governing body of the county or municipal corporation

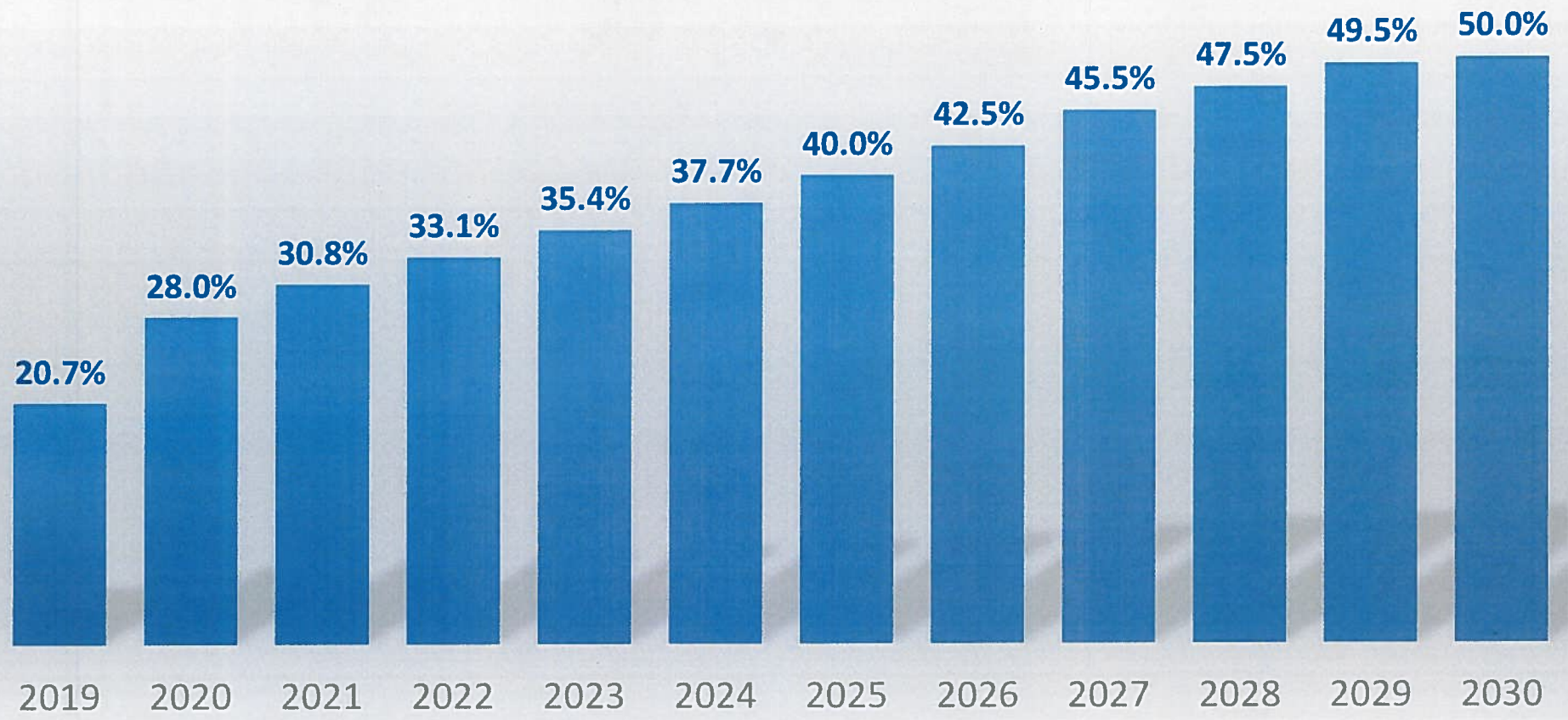
(2) The effect of the generating station on:

- (i) Stability & reliability of the grid;
- (ii) Economics;
- (iii) Esthetics and historic sites;
- (iv) Environmental;
- (v) Safety (e.g., aviation safety)

(3) Consistency with comprehensive plan / zoning; efforts to resolve any issues presented by a county.

2019 Clean Energy Jobs Act: Renewable Goals (%)

MARYLAND DEPARTMENT OF NATURAL RESOURCES



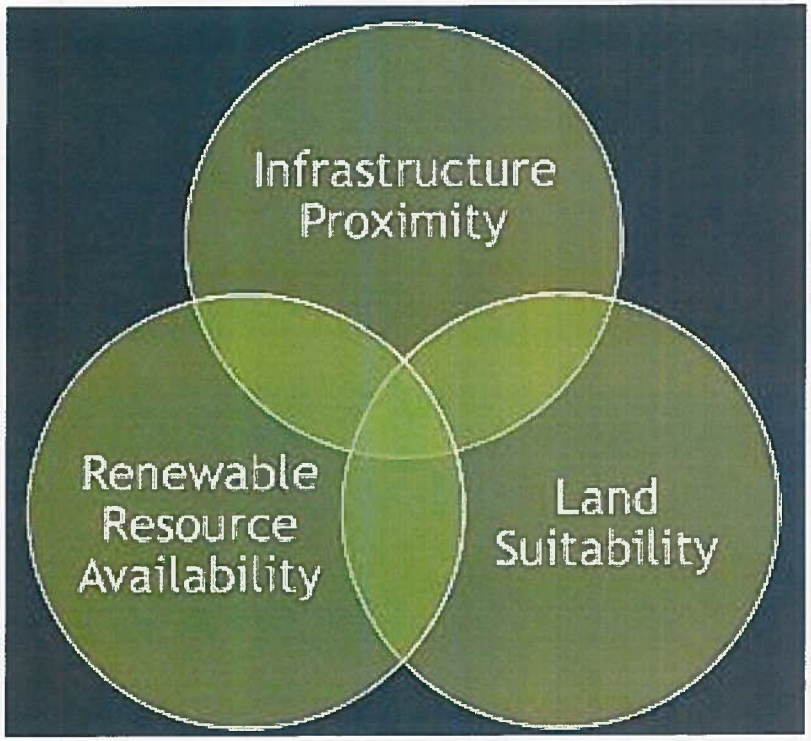
Anticipating Solar Development

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Land Required to Fulfill 14.5% Solar Carve-Out Requirements	
Solar capacity required to meet generation requirement (MW)	5,000
Land requirements at five acres per MW (acres)	25,000

Smart Siting

MARYLAND DEPARTMENT OF NATURAL RESOURCES

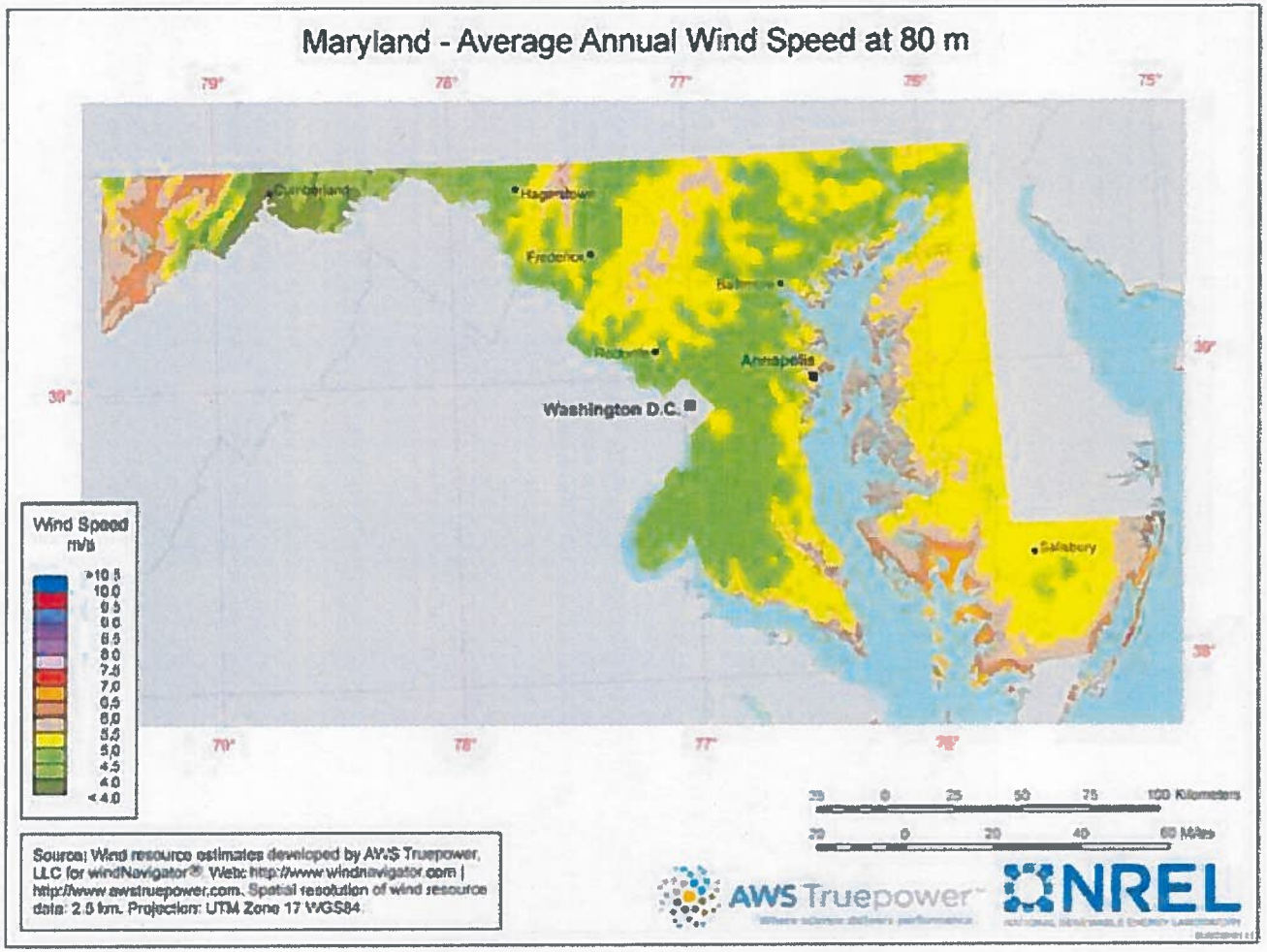


MARYLAND DEPARTMENT OF NATURAL RESOURCES

Maryland Energy Administration

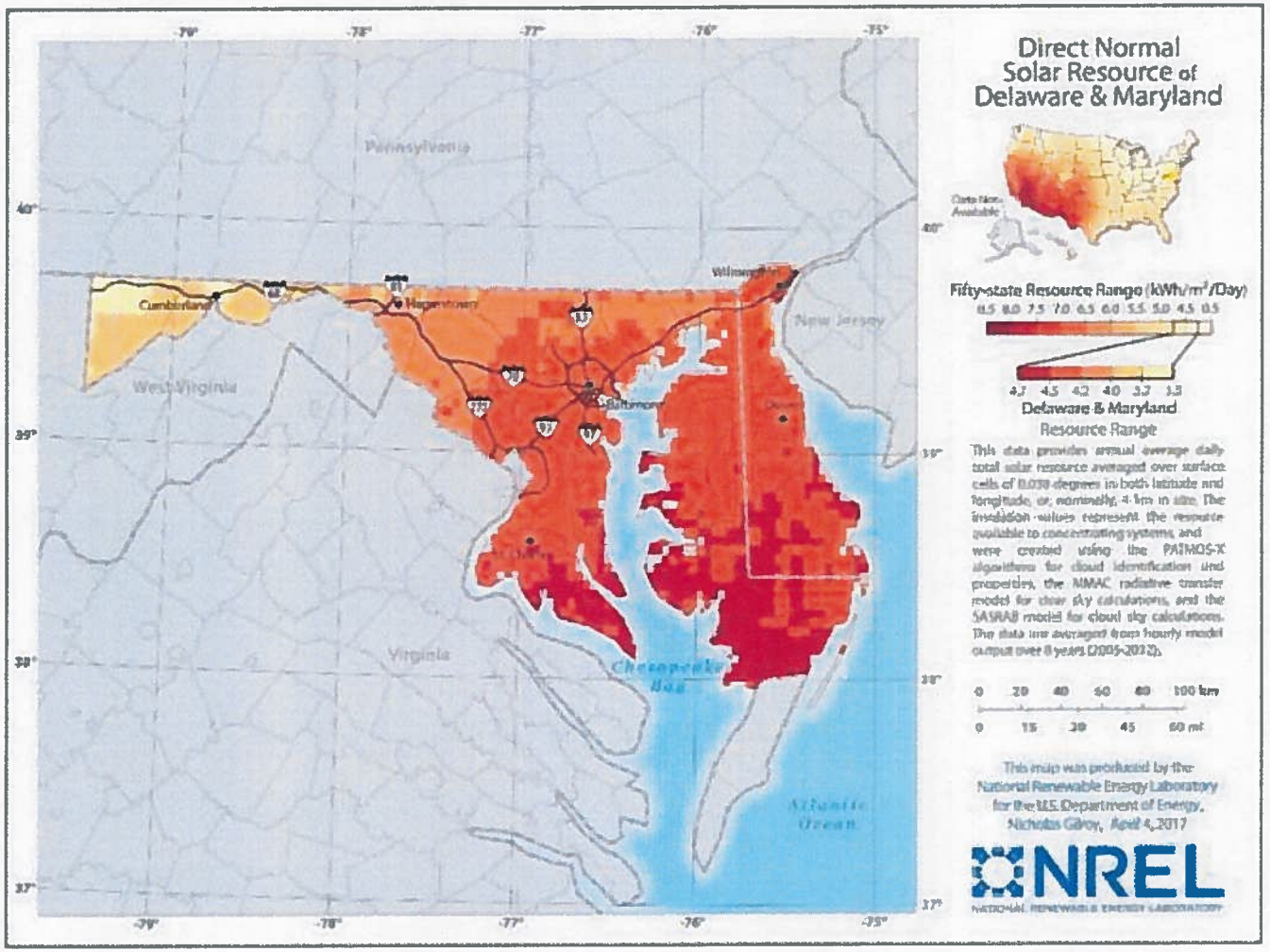
Renewable Resource Availability - Wind

MARYLAND DEPARTMENT OF NATURAL RESOURCES



Renewable Resource Availability - Solar

MARYLAND DEPARTMENT OF NATURAL RESOURCES



SmartDG+ Purpose

MARYLAND DEPARTMENT OF NATURAL RESOURCES

- SmartDG+ is a free, online, GIS-based screening tool sponsored by MEA and PPRP.
- It is intended to help developers and officials identify areas for the location of new wind and solar projects in Maryland.
- Focus is for projects greater than 2 MW—i.e., bigger than rooftop solar.

SmartDG+ Development Process

- Met with county and utility officials to discuss local priorities and policies of relevance
- Evaluated electrical lines throughout Maryland
- Gathered publicly available data on barriers to project construction

SmartDG+ Data Layers

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Infrastructure Proximity

- Electricity lines

Renewable Resource Availability

- Viable wind speeds
- Solar

Land Suitability

- Protected areas
- Flood zones
- Land cover/land use
- Airports
- DOD no-go zones
- County zoning

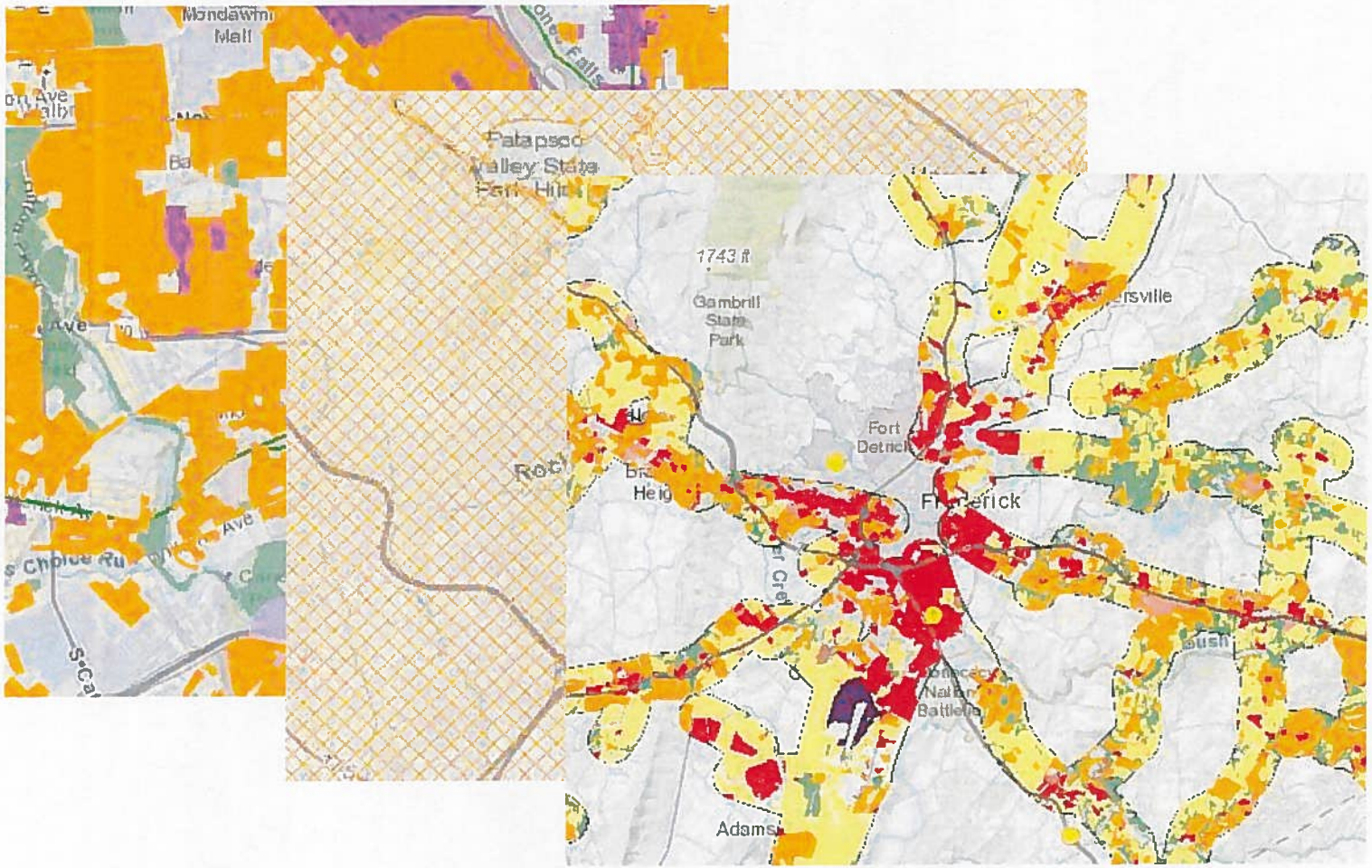
SmartDG+
Additional Screens

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

- County-level zoning
- County-level protected areas
- NAS Patuxent River Protected Areas
- MALPF easements
- Forested lands

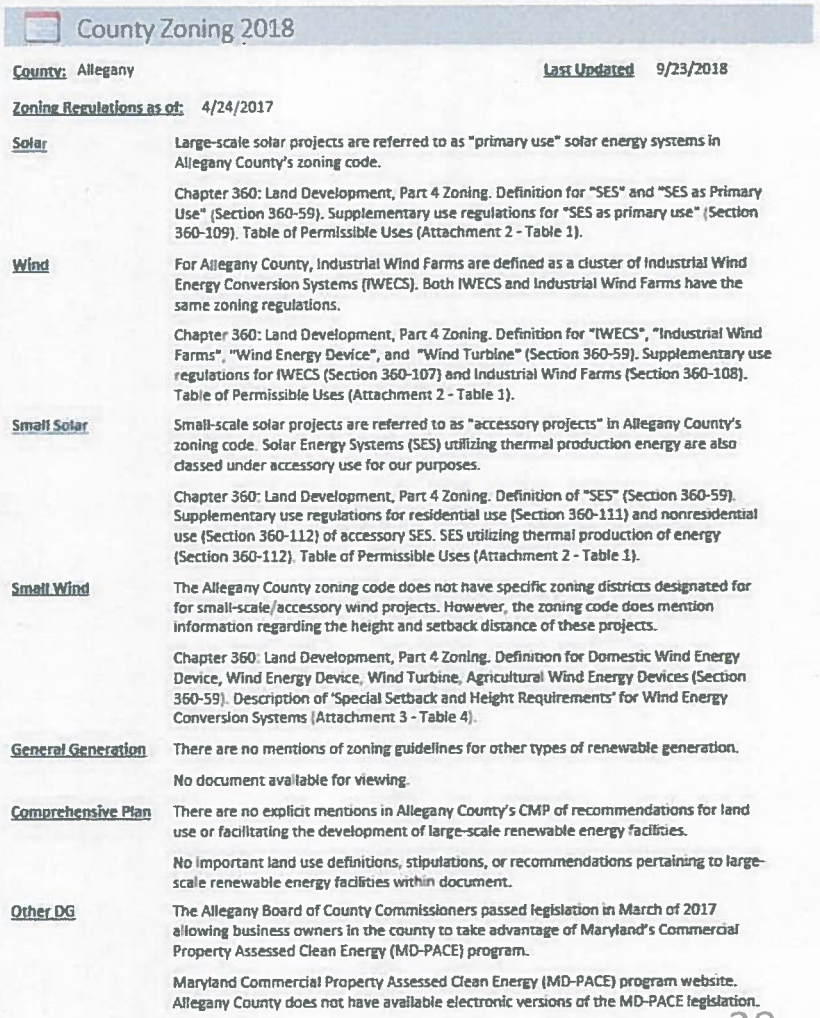
SmartDG+
Example Product

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



SmartDG
County Zoning Guide

- The County Zoning Guide is a compilation of all relevant county zoning language that addresses renewable energy projects that are 2 MW or above.
- A link to the guide is found on SmartDG+ homepage.
- The document is currently being updated to maximize user-friendliness.



County Zoning 2018

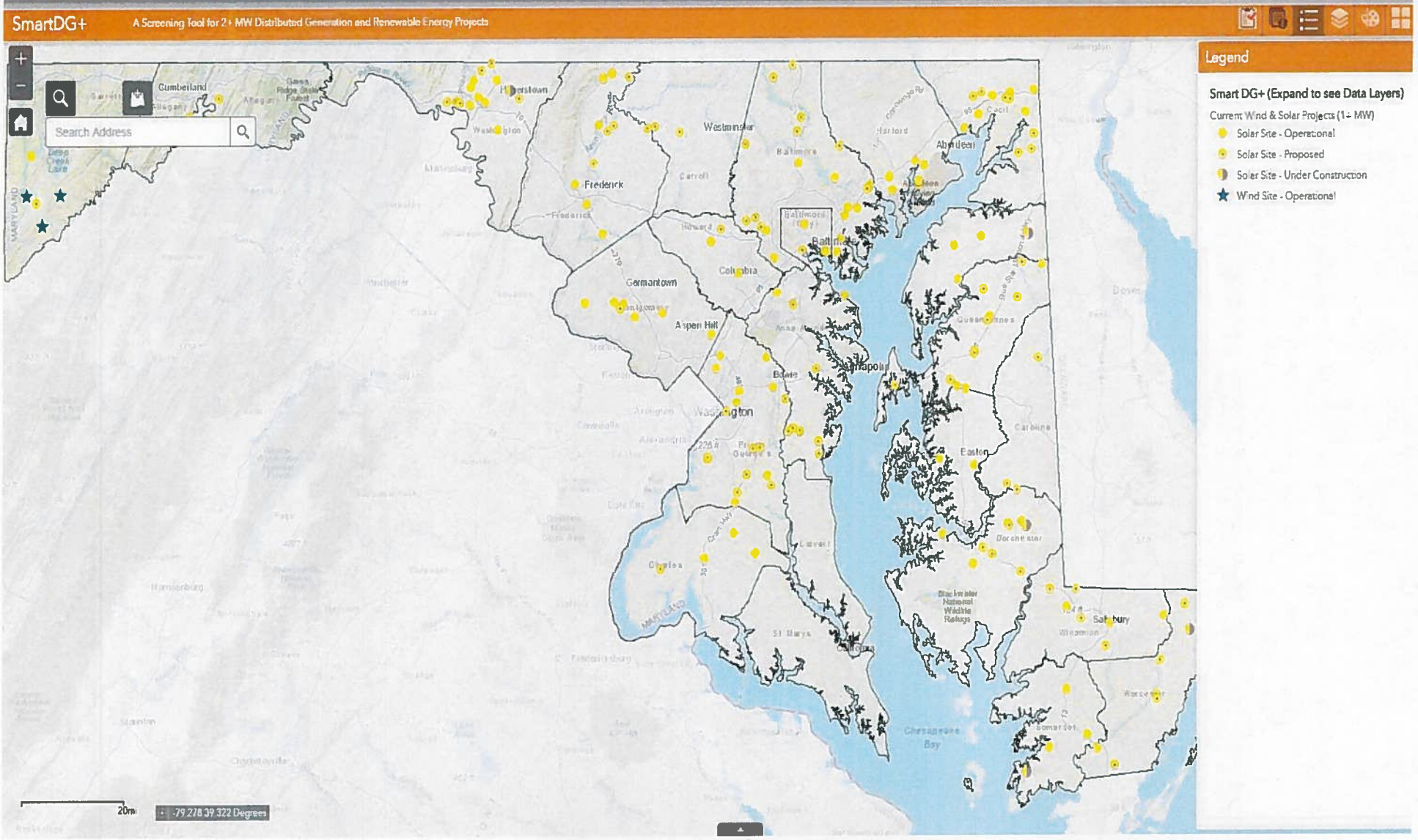
County: Allegany **Last Updated** 9/23/2018

Zoning Regulations as of: 4/24/2017

Solar	Large-scale solar projects are referred to as "primary use" solar energy systems in Allegany County's zoning code.
	Chapter 360: Land Development, Part 4 Zoning. Definition for "SES" and "SES as Primary Use" (Section 360-59). Supplementary use regulations for "SES as primary use" (Section 360-109). Table of Permissible Uses (Attachment 2 - Table 1).
Wind	For Allegany County, Industrial Wind Farms are defined as a cluster of Industrial Wind Energy Conversion Systems (IWECS). Both IWECS and Industrial Wind Farms have the same zoning regulations.
	Chapter 360: Land Development, Part 4 Zoning. Definition for "IWECS", "Industrial Wind Farms", "Wind Energy Device", and "Wind Turbine" (Section 360-59). Supplementary use regulations for IWECS (Section 360-107) and Industrial Wind Farms (Section 360-108). Table of Permissible Uses (Attachment 2 - Table 1).
Small Solar	Small-scale solar projects are referred to as "accessory projects" in Allegany County's zoning code. Solar Energy Systems (SES) utilizing thermal production energy are also classed under accessory use for our purposes.
	Chapter 360: Land Development, Part 4 Zoning. Definition of "SES" (Section 360-59). Supplementary use regulations for residential use (Section 360-111) and nonresidential use (Section 360-112) of accessory SES. SES utilizing thermal production of energy (Section 360-112). Table of Permissible Uses (Attachment 2 - Table 1).
Small Wind	The Allegany County zoning code does not have specific zoning districts designated for for small-scale/accessory wind projects. However, the zoning code does mention information regarding the height and setback distance of these projects.
	Chapter 360: Land Development, Part 4 Zoning. Definition for Domestic Wind Energy Device, Wind Energy Device, Wind Turbine, Agricultural Wind Energy Devices (Section 360-59). Description of 'Special Setback and Height Requirements' for Wind Energy Conversion Systems (Attachment 3 - Table 4).
General Generation	There are no mentions of zoning guidelines for other types of renewable generation.
	No document available for viewing.
Comprehensive Plan	There are no explicit mentions in Allegany County's CMP of recommendations for land use or facilitating the development of large-scale renewable energy facilities.
	No important land use definitions, stipulations, or recommendations pertaining to large-scale renewable energy facilities within document.
Other DG	The Allegany Board of County Commissioners passed legislation in March of 2017 allowing business owners in the county to take advantage of Maryland's Commercial Property Assessed Clean Energy (MD-PACE) program.
	Maryland Commercial Property Assessed Clean Energy (MD-PACE) program website. Allegany County does not have available electronic versions of the MD-PACE legislation.

SmartDG+
Example Product

MARYLAND DEPARTMENT OF NATURAL RESOURCES



Resources

More information available at the Power Plant Research Program website:

www.dnr.maryland.gov/pprp

Program Contact:

David Tancabel, PPRP Director
Tawes Office Building, B-3
410-260-8691
David.Tancabel@maryland.gov

Renewable Energy Development and Siting Task Force
Sept. 20, 2019
2:30 p.m.

Minutes

- Welcome
  - Welcome and attendance taken by Chair Greg Snook at 2:33 p.m.

- From the Chair
  - Snook introduced John Finnerty to the task force as they solar energy representative.
  - Snook introduced Andrew Gohn to the task force as the wind energy representative.
  - Snook introduced the Maryland Public Service Commission's (PSC) Joey Chen, who then reviewed Certificate of Public Convenience (CPCN) considerations.
    - After the presentation, Snook opened up the call to questions from task force members and interested stakeholders.

- Presentation by Joey Chen, PSC
  - Key takeaways
    - The Maryland PSC is recognized under existing law as the ultimate authority for generation and solar facilities over 2 megawatts.
    - The granting of the CPCN requires the Commission or the assigned Public Utility Law Judge to give due consideration of several factors that includes the recommended position of the locals and government, the consistency with zoning policies, and a recommended comprehensive plan.
    - The Commission gives significant weight to the local government's position.
    - CPCNs are subject to specific licensing conditions as adopted by the Commission, and interested parties can offer recommended conditions.
    - Once the CPCN is issued, it does not mean it is a done-deal.
      - If one of the conditions is not satisfied, that can jeopardize the project.

- Snook opened up the call for questions from task force members
  - Janet Christensen-Lewis asked what enforcement body oversees the licensing conditions, such as the county, Power Plant Research Program (PPRP), or PSC.
    - Chen explained licensing conditions often involve compliance filings, which are submitted to the Commission. The Commission can take appropriate action depending on the status of or issues raised concerning the compliance filing.
    - David Tancabel with PPRP explained that PPRP is not an enforcement agency. They are more than happy to respond to people who feel there are potential violations. PPRP has been fielding more and more calls and emails regarding potential violations.
      - PPRP has recommended that an applicant for a CPCN designate a point of contact, which stays on file with the PSC in order to answer potential complaints or questions.
    - Chen noted that the Commission has the authority to suspend or revoke a CPCN, which is the prerequisite before construction can begin for modification of a generation facility.
  - Snook asked if most projects require a performance bond from the applicant to assure the projects to get done.
    - Tancabel with PPRP said that PSC usually places conditions for potential decommissioning plan. Decommissioning plans help protect county and state government.
  - Jason Dubow from Maryland Department of Planning (MDP) asked what are the reasons for the county or municipality not being a party to the proceeding from the beginning, and

what change would have to happen in order to make local government be parties to the proceeding by default.
    - Chen explained that the counties do not always want to participate.
        - During some public comment hearings, there is not always full interest or participation from the local level.
        - If there is some policy shift that needs to happen, it would come from the legislative level.
- Billy Bishoff suggested that all complaints should be going directly through the PSC, as they have the authority to set the standard.
    - Chen explained that the licensing conditions can touch on different subject areas. Sometimes the PSC cannot go out to see if the condition has been satisfied, which means there needs to be a partnership between other agencies, be it state or local.
        - Tancabel said that they have somewhat modified recommendations over the past year. First, PPRP will try to help resolve issues, and if it cannot be resolved with PPRP, then they will bring it to PSC.
- Finnerty asked if there is a measure in place to record the projects that make it through the CPCN process and are operating successfully. He also commented that the state CPCN process is rigorous and structured.
    - Chen noted that they have a list of the CPCN's that have been issued.
- Terry McGean asked if the preemption and PSC's ultimate siting authority covers the related equipment like substations and transformers.
    - Chen explained that substations and other types of grid assets takes you into the domain of the utilities, but the Commission has recognized that the counties should be able to enforce their own ordinances. .
    - Tancabel noted that often times applications include the small substation and interconnection line as one package/one CPCN.

- Other Business
    - Snook opened up the call for interested stakeholders to ask questions and comment.
        - Kristen Harbeson with the Maryland League of Conservation Voters thanked the chair for including interested stakeholders.
    - Snook welcomed thoughts and suggestions.
    - Snook said he is looking at hosting another call in the next 1-2 weeks.
    - Lewis acknowledged that Secretary Grumbles is working with PPRP on the need for more information on brownfields and landfills. She also brought up that more information is needed on distribution lines and grid congestion to better understand where rooftop solar would be of benefit.
    - Bishoff brought up incentivizing development.

- Adjournment
    - Snook adjourned the call at 3:48 p.m.

Attendees

- Abigail Peryea, Maryland Energy Administration (MEA)
- Adam Gruzs, MDP
- Allison Cordell, Governor 's Office
- Andrew Gohn, Wind Energy representative
- April King, Maryland Environmental Service (MES)
- Billy Bishoff, Maryland Farm Bureau representative
- Cassie Shirk, Maryland Department of Agriculture (MDA)
- David Comis, Maryland Energy Administration (MEA)
- David Tancabel, PPRP, Maryland Department of Natural Resources (DNR)
- Devon Dodson, Maryland Department of the Environment (MDE)

- Dorothy Morrison, Maryland Department of Transportation (MDOT)
- Eddie Lukemire, MDOT
- Ewing McDowell, Maryland Department of Commerce (Commerce)
- Greg Snook, Chair
- Hannah Schaeffer, Governor's Office
- Helen Stewart, PPRP, DNR
- Interested Stakeholders
- James McKitrick, DNR
- Janet Christensen-Lewis, Maryland Farm Bureau representative
- Jason Dubow, MDP
- Jeannie Haddaway-Riccio, DNR
- Joe Bartenfelder, MDA
- Joey Chen, PSC
- John Finnerty, Solar Energy representative
- Julie Oberg, MDA
- Les Knapp, Maryland Association of Counties (MACo) representative
- Lisa Smith, PSC
- Nimisha Sharma, MDOT
- Roy McGrath, MES
- Ryan Opsal, MEA
- Sandra Schrader, MDP
- Stephen Schatz, Governor's Office
- Terry McGean, Maryland Municipal League (MML) representative

Maryland CPCN Considerations

Maryland Public Service Commission

Sections 7-207 and 7-208

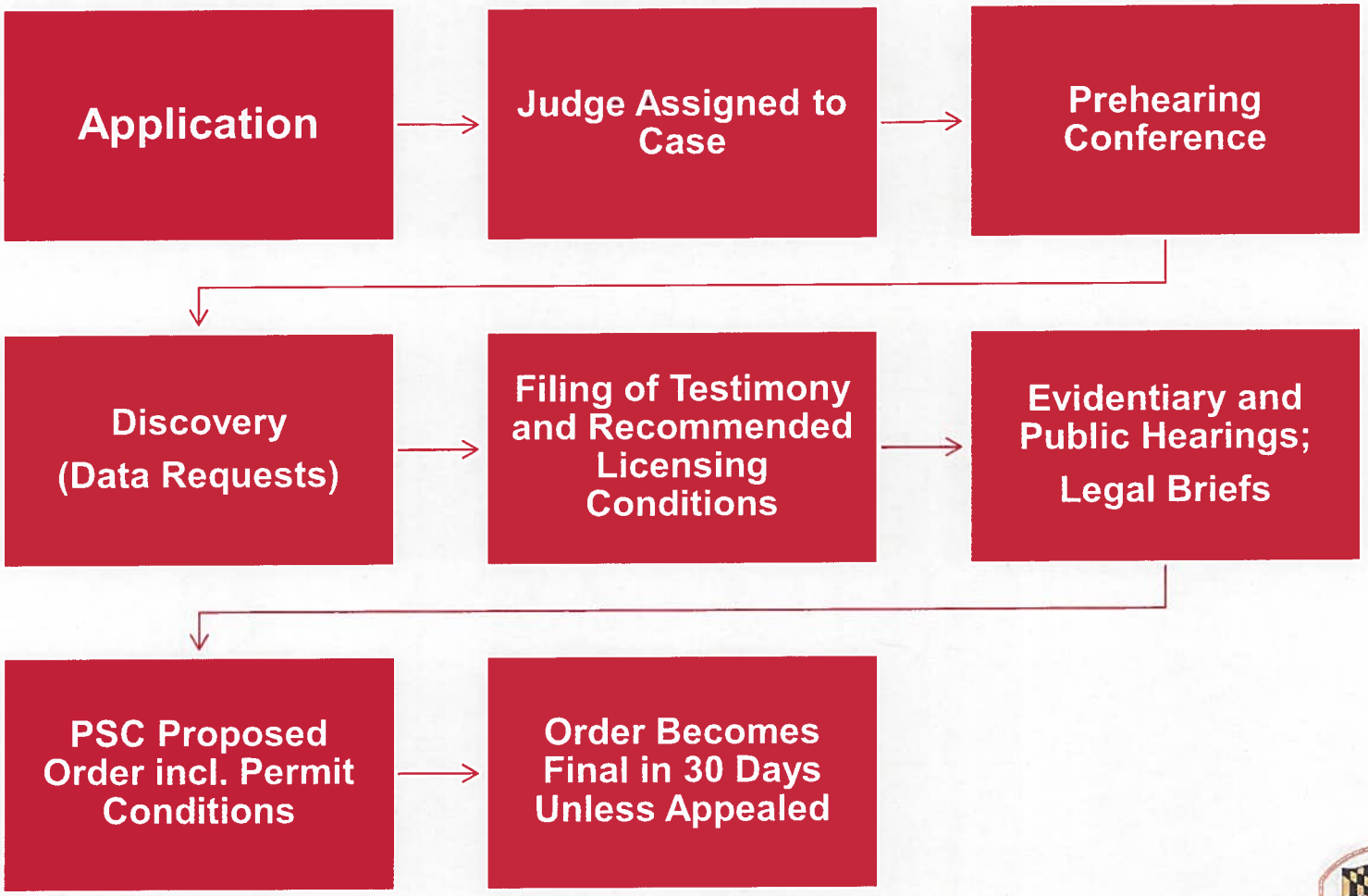
Public Utilities Article

MARYLAND
Public Service Commission

Certificate of Public Convenience and Necessity (Review)

- Required prior to constructing or modifying qualifying generating stations or high-voltage transmission lines
  - Exempt from CPCN requirement:
    - Projects with generation capacity less than or equal to 2 MW
  - May seek CPCN exemption with PSC approval:
    - Projects with on-site generation capacity of more than 2 MW (up to 25 MW) and at least 10% of generated electricity is consumed on site
    - Projects with on-site generation capacity (≤ 70 MW) and at least 80% is consumed on site
    - Projects with land-based wind generation (≤ 70 MW)

CPCN PULJ Procedure



Parties to the Proceeding

- Parties to Proceeding
  - Power Plant Research Program (Dept. of Natural Resources)
  - Maryland Office of People's Counsel
  - Maryland PSC Technical Staff
- Intervening Parties (by petition)
  - e.g., individuals, counties, advocates, organizations, etc.

PJM Evaluation of Project

- PJM typically not a party to CPCN proceeding
- PJM goal: to determine if Project requires system enhancements for grid stability/reliability.
- PJM conducts sequential studies:
  - Feasibility Study
  - Impact Study
  - Facilities Study
- PSC Staff references various PJM studies

CPCN Consideration Factors

- The Commission must give due consideration of the following factors:
  - Recommendation of the governing body of each county or municipal corporation in which any portion of the project is proposed to be located;
  - The effect of the proposed project on:
    - Stability and reliability of the electric system;
    - Economics;
    - Esthetics;
    - Historic sites;
    - Aviation safety;
    - Air and water pollution (when applicable); and
    - Availability of means for timely disposal of wastes produced

CPCN Factors (cont'd)

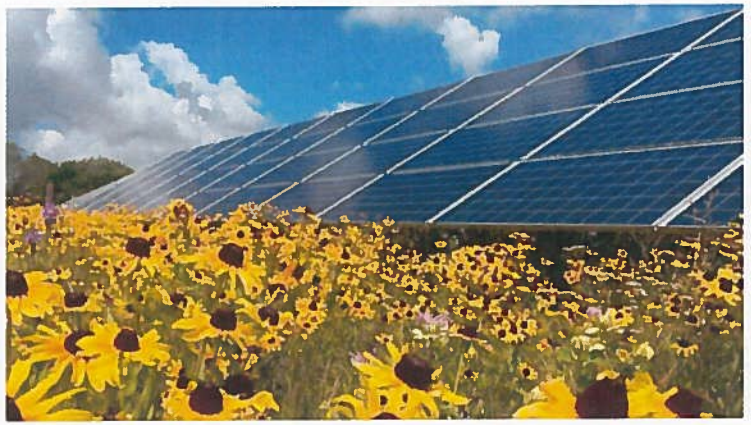
- Need to minimize loss of forest and provisions for afforestation/reforestation. Nat. Res. § 5-1603
- [Generating station] Commission must also consider:
  - Position of the local government on proposed project;
  - Consistency of Project with local government's comprehensive plan and zoning;
  - Efforts of affected parties to resolve issues presented by local government

Licensing Conditions

- Commission may impose specific licensing conditions as part of CPCN
  - E.g., solar decommissioning plan, conservation plan, vegetation management plan, afforestation/reforestation
  - PPRP and other parties propose licensing conditions
  - Licensing conditions are enforceable

Washington County, Maryland vs. Perennial Solar, LLC

- 86-acre solar project on site zoned as "Agricultural Rural"
- Perennial received special exception from Board of Zoning Appeals.
- Landowners and Board of County Comm'rs appealed zoning decision.
- Court of Appeals **held** (7/15/19): PSC is ultimate authority in siting large solar projects under PUA § 7-207 through implied preemption.
- CPCN matter (9408) pending before PSC.



Example: Big Spring Solar CPCN

- 3.5 MW solar project on land zoned Agricultural Rural
- Issue in Dispute: Amount of afforestation required, if any, under Forest Conservation Act and local Forest Conservation Ordinance
  - Washington County Board of Zoning Appeals granted Project special exception from mitigation.
  - Project would not remove trees.
- Party Positions
  - Big Spring: No tree removal, therefore afforestation unnecessary.
  - PPRP: due consideration of need to minimize loss of forest requires full compliance with FCA and mitigation.

Big Spring Solar CPCN (cont'd)

- PSC required to give due consideration to need to minimize loss of forest.
- **Held**: Afforestation mitigation was not required for the Project.
  - Project was subject to both the FCA and County FCO.
  - FCA may supersede FCO or land use ordinance, but preemption should be rarely used.
- PULJ gave significant weight to FCO and County's decision to grant exemption.
  - County has authority to implement its own FCO.

Example: Biggs Ford Solar CPCN

- 15 MW solar project in Frederick County
- At issue: Biggs Ford challenged new solar-specific zoning requirements by relying on Commission's preemption authority.
  - New zoning requirements removed solar farms from Ag. zones and created new Commercial Floating Zone District.
  - Biggs Ford refused to file an application for a floating zone reclassification.

Biggs Ford Solar CPCN (cont'd)

- Party Positions
  - Biggs Ford: PSC has preemptive authority to grant CPCN
    - Project complies with County's Comprehensive Plan (CP)
    - Project was consistent with 8 of 13 requirements under proposed zoning requirements.
  - PPRP: Recommended denial of CPCN.
    - State's recommended licensing conditions require conformity with county land use and site planning requirements.
    - Recommended Biggs Ford apply for floating zone reclassification
  - County intervened in proceeding
    - Project was not consistent with County's CP.
    - Project had not received necessary County approvals.
    - Project needed approval of zoning reclassification to proceed.

Biggs Ford Solar CPCN (cont'd)

- **Proposed Order Held**: Project is unable to meet all the statutory due consideration criteria needed for approval.
  - It is unnecessary to require Biggs Ford to seek a floating zone reclassification for the Project.
  - It is not in the public interest to approve a CPCN without adequate licensing conditions.
- On appeal to Commission
  - Decision: PSC remanded case to PULJ to give Biggs Ford opportunity to seek zone reclassification based on new zoning ordinance.
    - Premature to conclude the ordinance would always prevent approval of utility-scale solar projects.

Can other agencies' decisions affect CPCN issuance?

MD Solar 1 Project

- 32.5 MW (AC) Shugart Valley Place Solar Project
  - 537 acres, located in Charles County, MD
  - Required clearing 200 acres of trees
- CPCN granted Sept. 2018
  - PPRP and PSC Staff recommended licensing conditions
  - Licensing conditions: e.g. obtaining wetlands permit, etc.
- Aug. 28, 2019 - MDE denied Nontidal Wetlands and Waterways Permit

Source: https://www.origisenergy.com/projects/md-solar-1/

In Summary

- PSC is ultimate siting authority for generation facilities
- Granting of CPCN requires "due consideration" of several factors
- PSC gives significant weight to local government's position
- Granting of CPCN often subject to specific licensing conditions
- Other agency decisions can impact CPCN issuance

Questions

- If you have any questions about the CPCN process, please contact:

Joey Chen
Advisor to the Chairman
joey.chen@maryland.gov
(410) 767-8057

MARYLAND
Public Service Commission

www.psc.state.md.us

Renewable Energy Development and Siting Task Force
Oct. 3 2019
1:00 p.m.

Minutes

- Welcome
  - Welcome and attendance taken by Chair Greg Snook at 1:00 p.m.

- From the Chair
  - Snook reminded participants on the call to mute their phones unless they wish to speak in order to avoid background noise
  - Snook asked participants to identify themselves if they wish to speak
  - Snook introduced the Maryland Department of Transportation (MDOT), who gave a presentation on their solar initiatives

- Presentation by Eddie Lukemire, MDOT
  - Key takeaways
    - MDOT owns five solar arrays, which are installed under DGS' energy procurement contract.
    - MDOT's solar project results in sustainability: social, environmental, and economic.
    - State and federal incentives can be used to promote solar programs in Maryland, such as Maryland's Renewable Portfolio Standard and the Greenhouse Gas Reduction Act.
    - MDOT considers the mode of transportation, the geographic location, functions, and internal management structures when working to create a master contract.
    - A lot of electric vehicle (EV) charging companies have a short-term business model that incorporates some Volkswagen settlement funds. Trying to incorporate that into a contract with solar can be difficult. A solution that they came up with is to make ready a certain percentage of parking areas so that they can come back in afterwards and install EV charging stations.
  - Snook reiterated the main objectives of the Task Force, which are laid out in the Executive Order.
  - Snook opened the call up to questions and comments from task force members, and reminded everyone there is time allotted during the call for public input.
    - Snook asked who else is included in the master agreement that MDOT has.
      - Lukemire explained that it was developed within MDOT, but others can use the contract.
        - Lukemire also explained that so far, MDOT has given their presentation to numerous other state agencies and a non-profit. A few counties have also shown interest and reached out for more information.
    - Jason Dubow from the Maryland Department of Planning (MDP) asked if MDOT has any estimates for cost savings.
      - Lukemire noted that renewable energy credits change, and it depends on the demand for the renewable portfolio standards. They are expecting to

generate close to one million dollars in renewable energy credits over the first three years.

- Janet Christensen-Lewis asked about clarifying power purchase agreements (PPA)
  - Lukemire explained that there is a technical proposal and a pricing proposal. The pricing proposal asks that the contractor price the contract out with MDOT owning the solar renewable energy credits, or the contractor retaining them.
- Lewis also asked if the solar renewable energy certificates count towards the 14.5% goal of in-state solar accumulations.
  - Lukemire noted that if they maintain the credits they can claim them, but not if they sell them back.
- John Finnerty representing the solar energy industry asked about Lukemire's experiences with developing sites and if public comments are positive are negative.
  - Lukemire said that they have not begun construction yet but they have heard both sides from the public, overall it is positive.

- Presentation by Lisa Hoerger, Critical Area Commission (CAC)
  - Commission staff is drafting regulations for consideration by the Critical Area Commission to address siting of solar projects.
  - Hoerger explained that the regulations will likely include the following elements that are applicable to all solar projects in the three overlay zones: Intensely Developed Areas, Limited Development Areas, and Resource Conservation Areas:
    - Limit cumulative forest clearing to 10 acres per project and require a minimum of 1:1 mitigation.
    - Prohibit disturbance to the following Habitat Protection Areas: Nontidal wetlands, forest Interior Dwelling Species habitats, colonial nesting waterbird sites, threatened and endangered species and their habitats, waterfowl staging and concentration areas, Natural Heritage Areas, locally significant habitats, anadromous fish propagation waters
    - Allow limited site access through the Critical Area Buffer, with mitigation.
    - Prohibit the granting of local Critical Area variances specific to the provisions of these regulations.
    - Exempt the area of the solar panels from lot coverage calculations when the panels are elevated and include planting underneath.
    - Manage stormwater through State requirements of the Maryland Department of the Environment (MDE).
    - Require a Public Service Commission (PSC)-approved decommissioning plan for each project.
  - Hoerger also explained that the regulations will also include the following elements for solar projects in the Resource Conservation Areas only:
    - For the life of the project, require reservation of unused development rights at a ratio of one development right for every 20 acres of the project.
    - Locate projects 300 feet from tidal waters, tidal wetlands and tributary streams.
  - Snook opened up the call to questions and comments from task force members.
    - Snook asked if there are any projects in the critical area at this time.
      - Hoerger noted that there are none currently.

        - Ben Grumbles, Secretary of MDE asked if 8.5% of the state is considered a Resource Conservation Area. He also asked if this regulation would remove any possibility of a solar facility within the resource conservation area.
            - Hoerger confirmed that the 8.5% is correct. She also explained that it would not remove that possibility, and that they are trying to provide accommodation for that to happen if the PSC would determine it is the appropriate site for a facility.
                - Grumbles asked how it would restrict development of solar facilities in parts of the critical area.
                    - Hoerger said there aren't necessarily restrictions, they are mostly focused on the larger projects that could potentially take up more land area. The Commission's regulations will balance Critical Area protection requirements with State goals for renewable energy.
        - Joey Chen with the PSC asked if the counties or CAC would enforce the issues in a Certificate of Public Convenience (CPCN) proceeding.
            - Hoerger explained that CAC would provide comments through the Power Plant Research Program (PPRP), who would pass them along to the PSC as they make their decision.
    - Snook opened up the call to questions and comments from anybody else who is not a member on the Task Force.
        - Kristen Harbeson from the Maryland League of Conservation Voters asked for a schedule of set call dates.
            - Snook noted that we are trying to educate the Task Force, and setting up presentations can sometimes present scheduling challenges. He noted at this time, it looks like calls will take place every other week.
            - Snook also asked for comments, suggestions and recommendations that we can consider.
        - Les Knapp with the Maryland Association of Counties (MACo) noted that the Maryland County Planners Affiliate Meeting will be on Friday, Nov. 1.
        - Lewis asked for more detail regarding the kinds of comments that the Chair mentioned.
            - Snook explained that each member or entity looks at the goals through a different lense, so more specific comments and suggestions are welcomed.
        - Snook noted that public facilities should be encouraged to install solar on their parking lots, rooftops, etc. He explained that when these larger facilities, like colleges, are designed, they should consider incorporating future solar panels.
        - Bishoff brought up the closing of Verso in Western Maryland and what we can do with the wood chips, and that economic development could put further thought into it.

- Snook adjourned the call at 2:02 p.m.

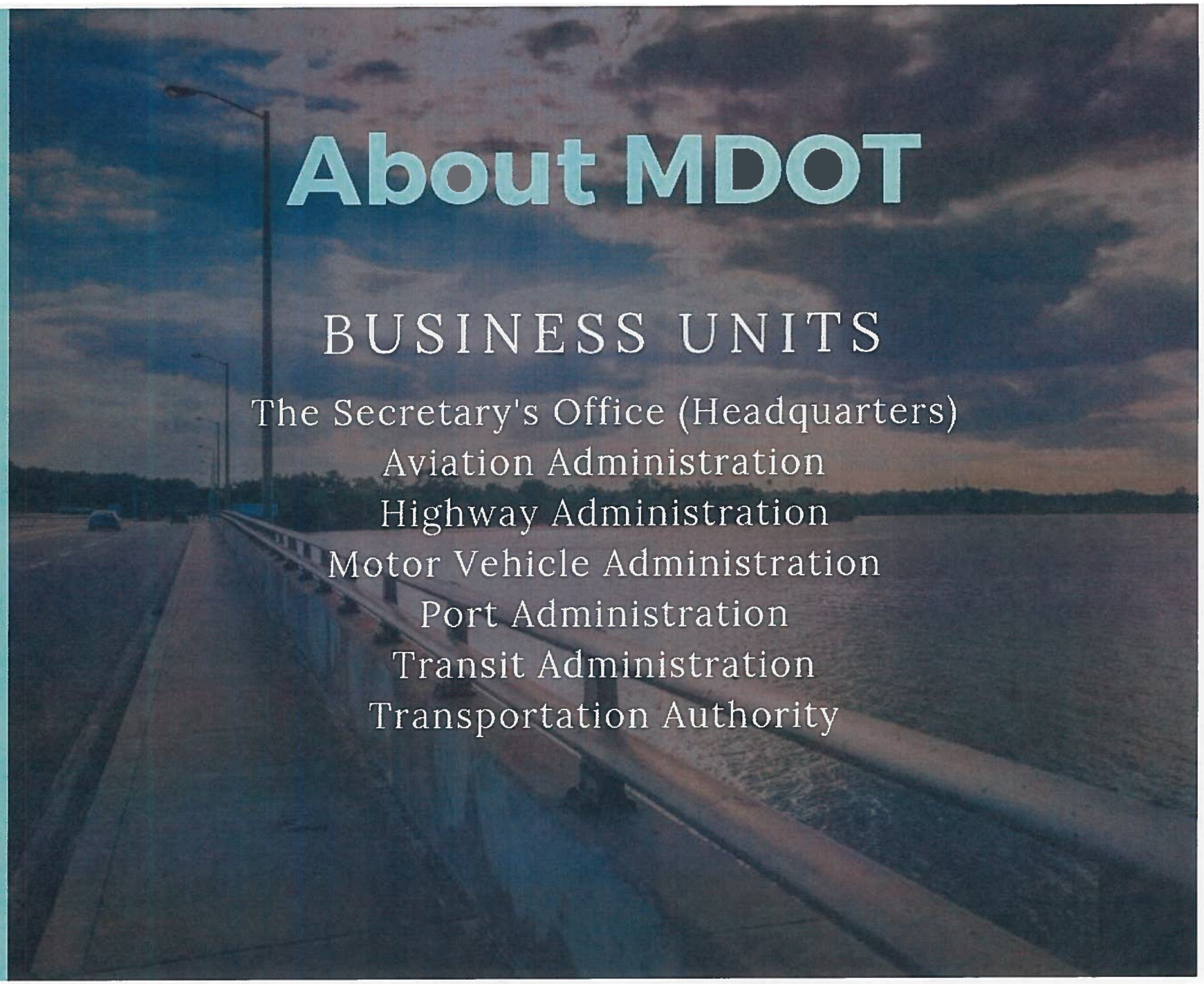
Attendees

- Abigail Peryea, Maryland Energy Administration (MEA)
- Adam Gruzs, MDP
- Allison Cordell, Governor 's Office

- Andrew Gohn, Wind Energy representative
- April King, Maryland Environmental Service (MES)
- Billy Bishoff, Maryland Farm Bureau representative
- Cassie Shirk, Maryland Department of Agriculture (MDA)
- Charles Glass, Maryland Department of Transportation (MDOT)
- David Comis, MEA
- David Tancabel, PPRP, Maryland Department of Natural Resources (DNR)
- Devon Dodson, MDE
- Dorothy Morrison, MDOT
- Eddie Lukemire, MDOT
- Ewing McDowell, Maryland Department of Commerce (Commerce)
- Greg Snook, Chair
- Hannah Schaeffer, Governor's Office
- Helen Stewart, PPRP, DNR
- Interested Stakeholders
- James McKitrick, DNR
- Janet Christensen-Lewis, Maryland Farm Bureau representative
- Jason Dubow, MDP
- Joe Bartenfelder, MDA
- Joey Chen, PSC
- John Finnerty, Solar Energy representative
- Julie Oberg, MDA
- Katherine Charbonneau, CAC, DNR
- Les Knapp, MACO
- Lisa Hoerger, CAC, DNR
- Lisa Smith, PSC
- Nimisha Sharma, MDOT
- Sandra Schrader, MDP
- Stephen Schatz, Governor's Office

Solar Power at Maryland DOT

MDOT
MARYLAND DEPARTMENT
OF TRANSPORTATION



About MDOT

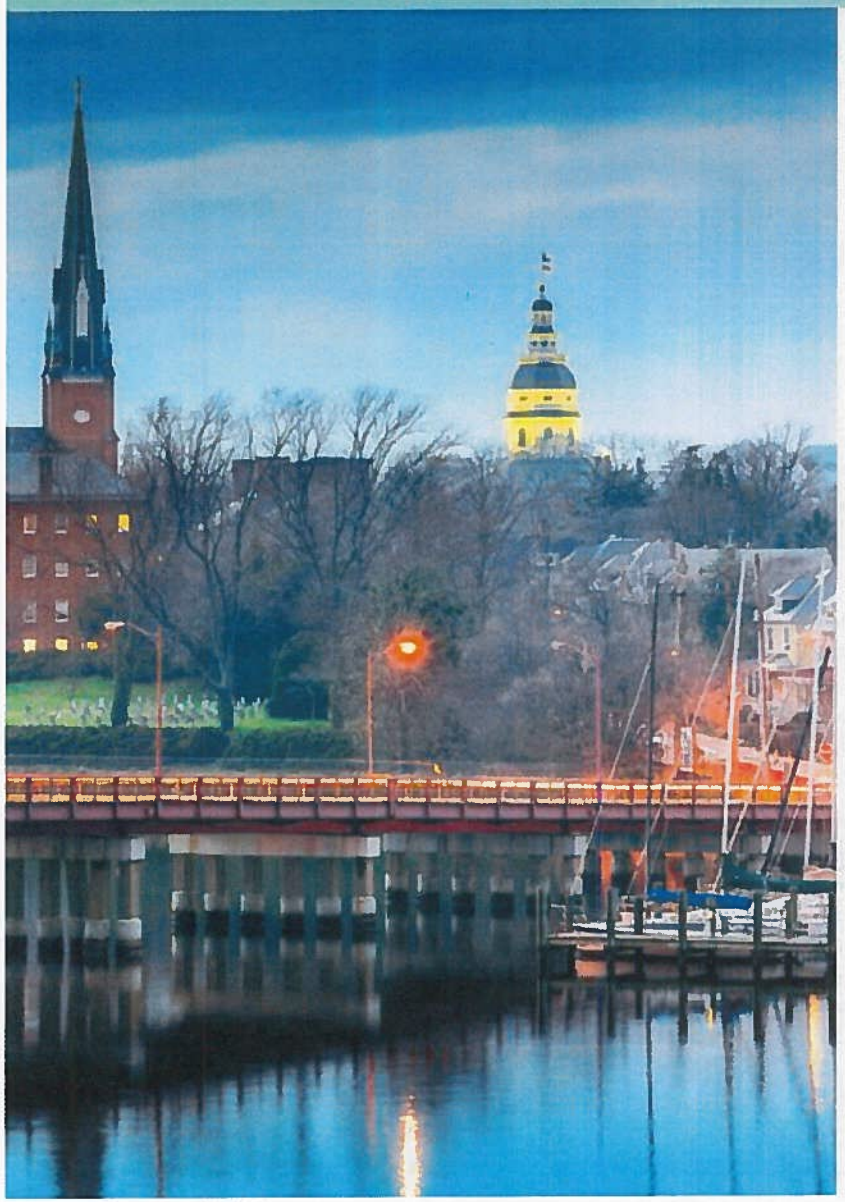
BUSINESS UNITS

The Secretary's Office (Headquarters)
Aviation Administration
Highway Administration
Motor Vehicle Administration
Port Administration
Transit Administration
Transportation Authority

Annual Energy Consumption

UTILITY	SOLAR
395,000 MWH	2,300 MWH
$ 35M	$ 265K
275K MT CO2E	1.6K MT CO2E

Why Solar?



SOCIAL

Reliable and resilient energy source
Improved public health

ENVIRONMENTAL

Greenhouse gas emission reduction
Water pollution reduction

ECONOMIC

Local, well-paying jobs
Affordable, stable energy prices

State & Federal Incentives

RENEWABLE PORTFOLIO STANDARD
50% by 2030
14.5% solar carve out

GREENHOUSE GAS REDUCTION ACT
40% by 2030

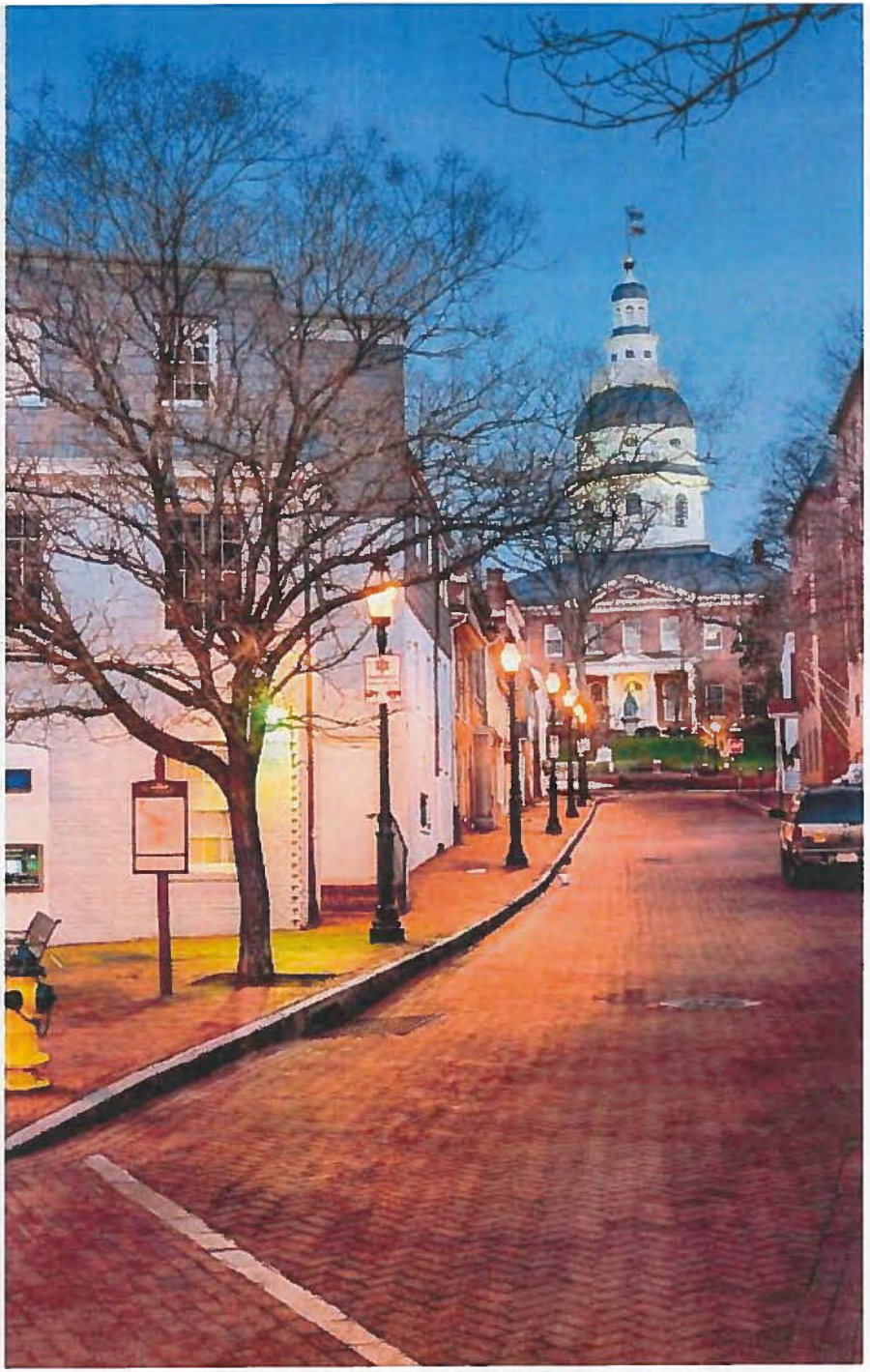
COMMUNITY SOLAR

NET METERING

ENERGY ADMINISTRATION GRANTS

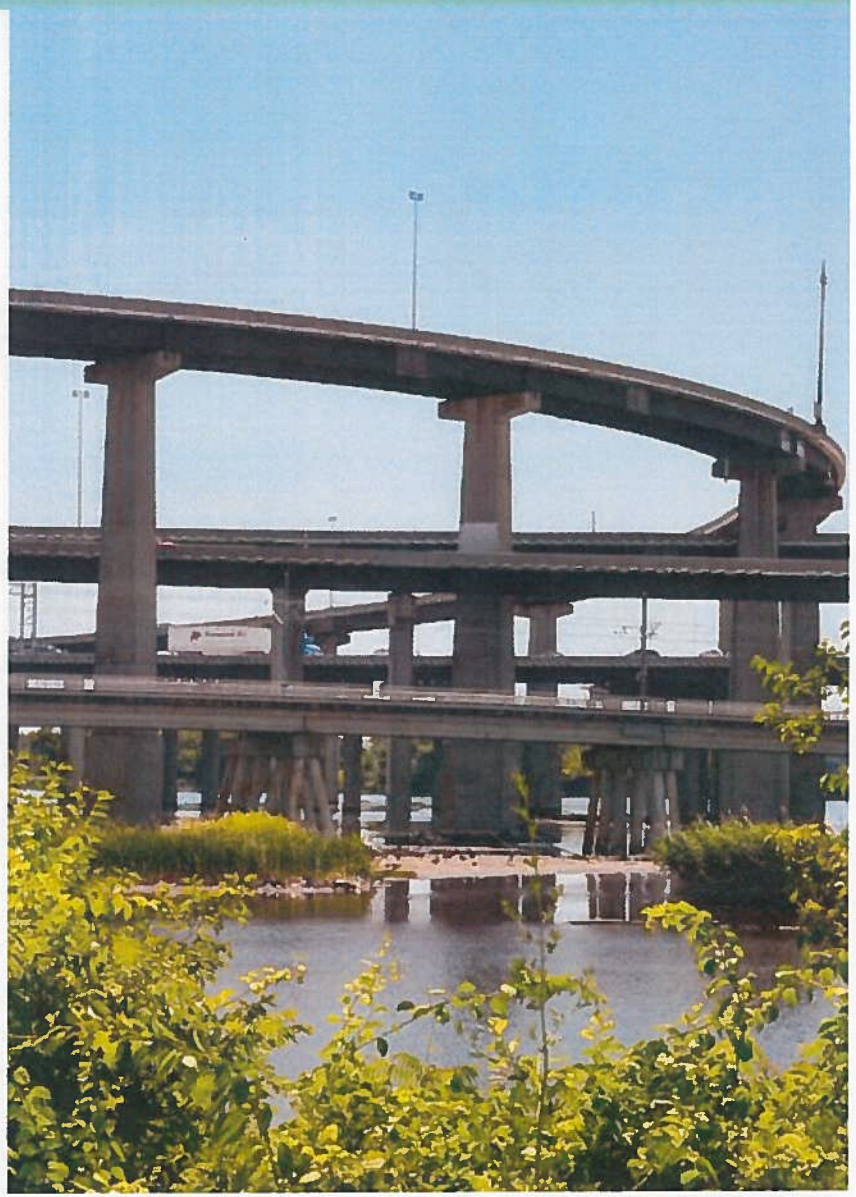
INVESTMENT TAX CREDIT
30% until 2019 - 26% until 2020 - 22% until 2021 - 10% thereafter

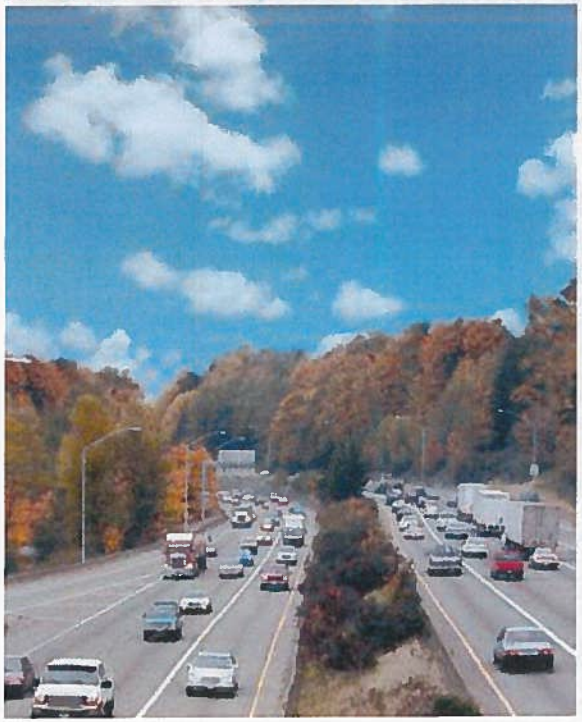
5-YR MODIFIED ACCELERATED COST RECOVERY SYSTEM (MACRS)



Master Services Agreement

- DESIGNED TO PROMOTE INNOVATION AND COMPETITION
- 5-YEAR CONTRACT, 2-YEAR RENEWAL
- QUALIFY MASTER CONTRACTORS
- SECONDARY COMPETITION FOR TASKS
- POWER PURCHASE & LICENSE AGREEMENTS (25-YEAR TERM)
- ENERGY PERFORMANCE, STORAGE, MICROGRIDS, ELECTRIC VEHICLE CHARGING
- BUYOUT OPTION
- COOPERATIVE AGREEMENT





Task Order Process

- MDOT SELECTS SITE(S) AND RELEASES TASK ORDER RFP TO MASTER CONTRACTORS
- MASTER CONTRACTORS ANALYZE SITES AND SUBMIT PROPOSAL
- MDOT AWARDS TO MASTER CONTRACTOR WITH MOST ADVANTAGEOUS PROPOSAL
- MASTER CONTRACTOR FINANCES, DEVELOPS, DESIGNS, CONSTRUCTS, COMMISSIONS, OPERATES, MAINTAINS AND DECOMMISSIONS
- MDOT PROVIDES THE LAND AND PURCHASES SOLAR POWER, OR COMMUNITY BUYS POWER

Benefits

DEVELOPER

Receives all tax incentives (ITC & MACRS)

Long-term agreement with MDOT to buy energy produced

MDOT

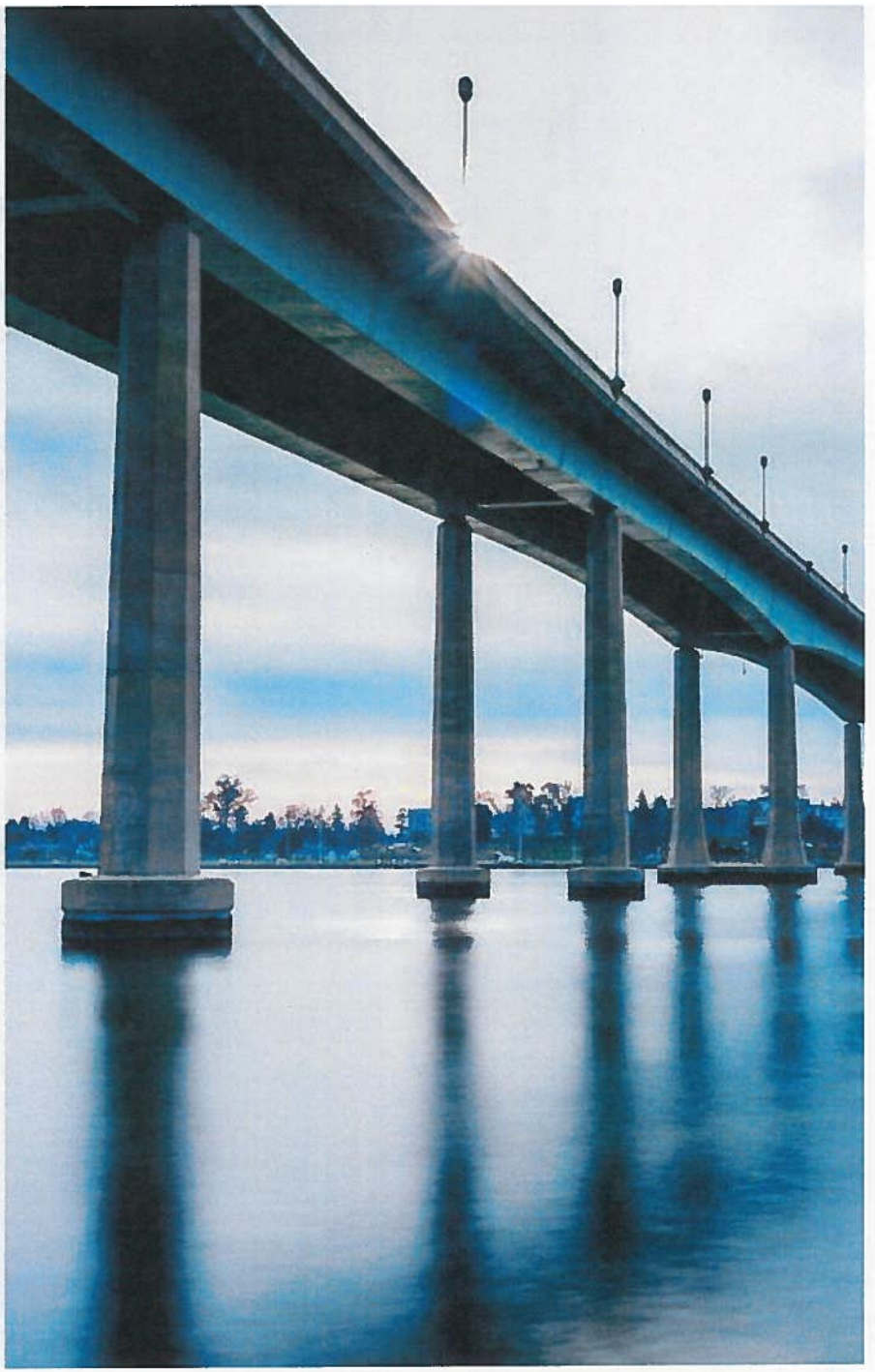
Zero upfront capital cost

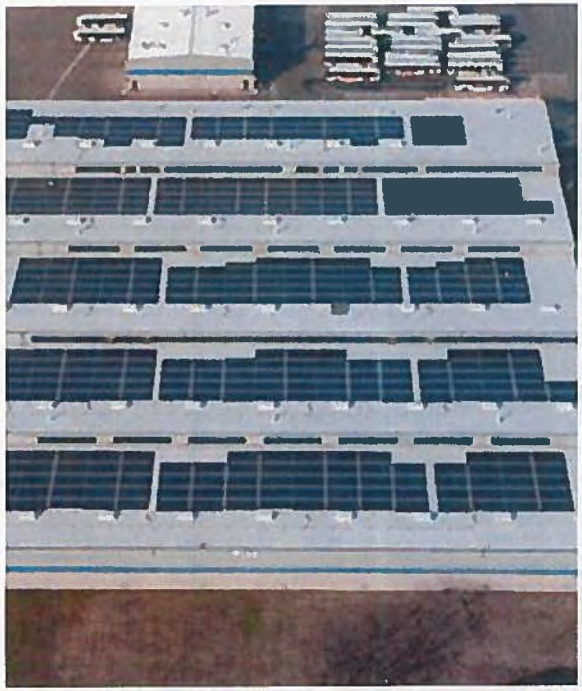
Full utilization of Federal tax incentives (ITC & MACRS)

Favorable fixed electricity rate

License revenue (Community Solar, EV chargers)

Solar Renewable Energy Credits (SRECs)





Task Orders Underway

- **6 MDOT MTA LIGHT RAIL PARK & RIDES**
  - 5 MW, 6,835 MWH/YR, 4,833 MT CO2E/YR
- **2 MDTA PARK & RIDES**
  - 1.5 MW, 2,050 MWH/YR, 1,450 MT CO2E/YR
- **13 ADDITIONAL MDOT MTA PARK & RIDES READY**
  - 14 MW, 19,137 MWH/YR, 13,533 MT CO2E/YR

Sites Under Review

- AIRPORT
- PORT
- TRANSIT-ORIENTED DEVELOPMENT
- NOISE BARRIERS
- UNIMPROVED LAND

Timeline

APRIL 2016
- Secretary authorized evaluation

JULY 2016
- Request for Information released

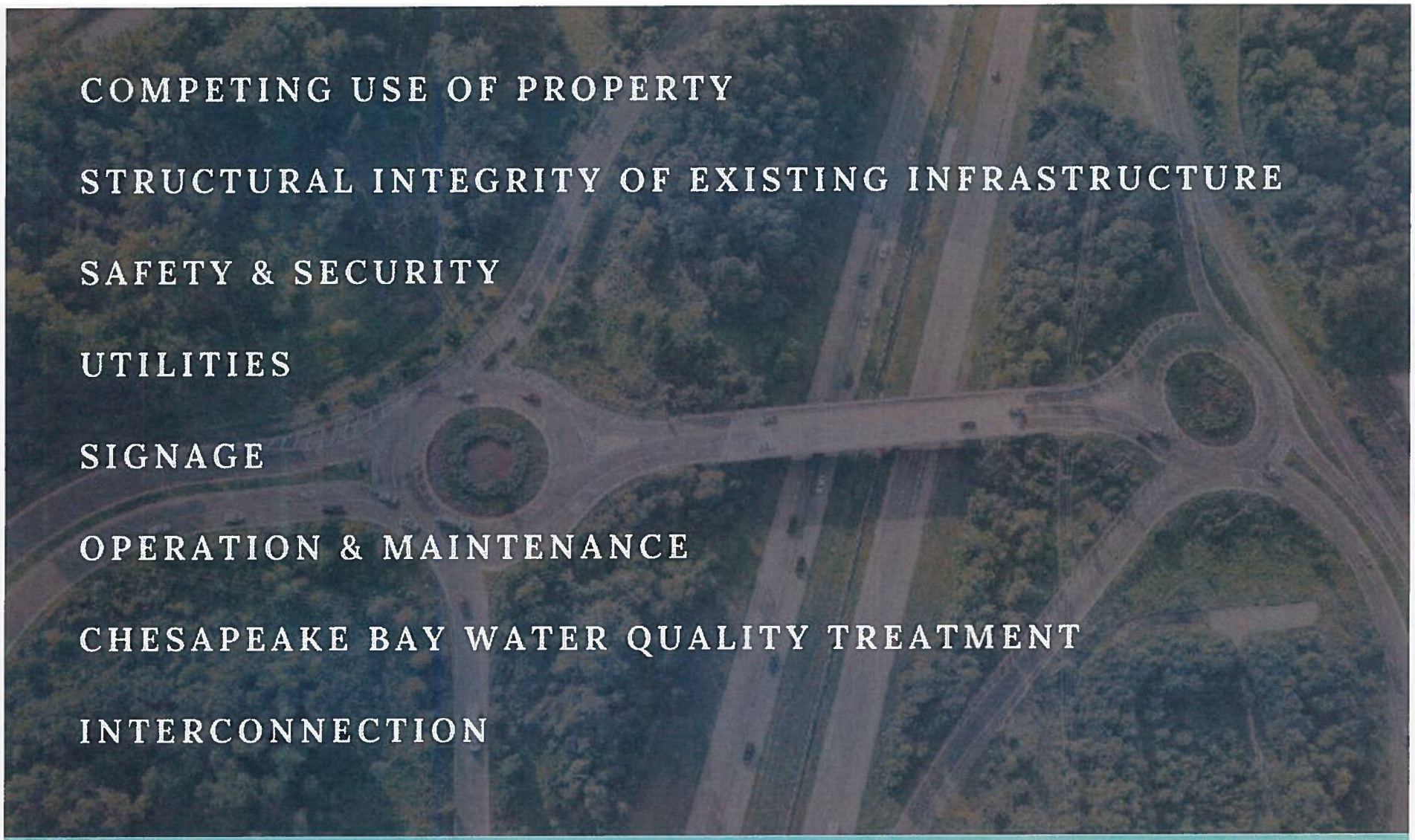
OCTOBER 2016
- Secretary approved project
  *No upfront capital
  *No impact to operations

DECEMBER 2016
- Governor's Office approved project

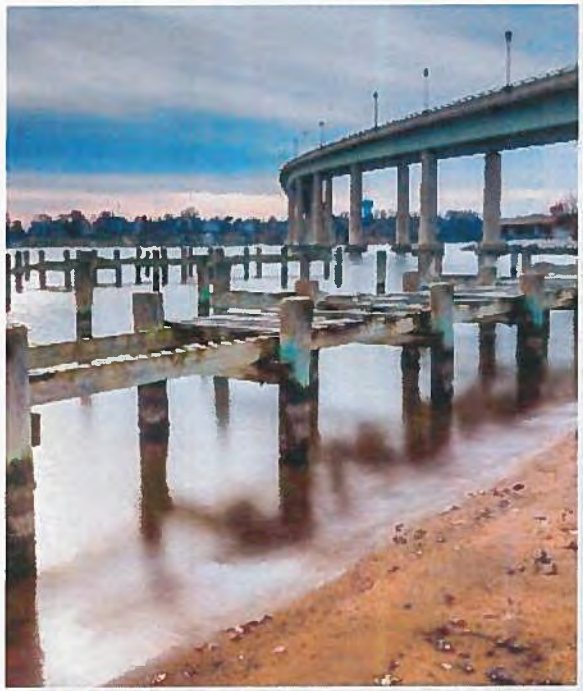
JUNE 2017
- Request for Proposal released

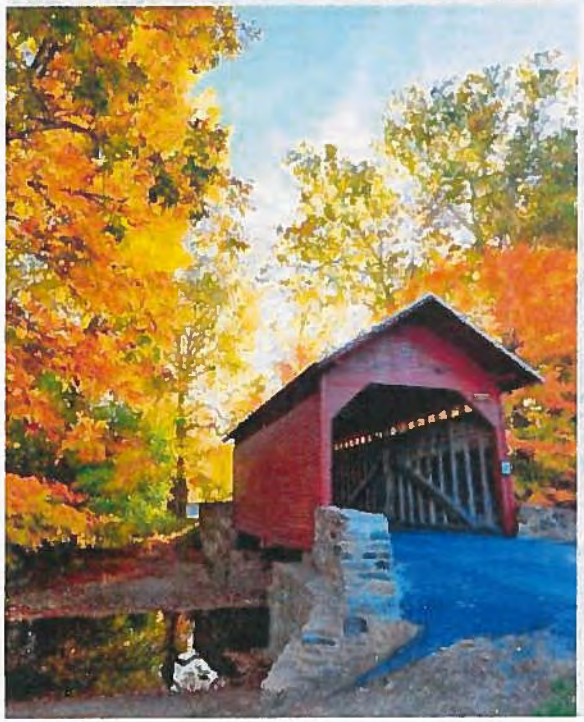
AUGUST 2017
- Proposals received

FEBRUARY 2018
- Master Contract awarded


COMPETING USE OF PROPERTY
STRUCTURAL INTEGRITY OF EXISTING INFRASTRUCTURE
SAFETY & SECURITY
UTILITIES
SIGNAGE
OPERATION & MAINTENANCE
CHESAPEAKE BAY WATER QUALITY TREATMENT
INTERCONNECTION

Challenges





Lessons Learned (so far)

- EXISTING LEASES & BONDS
- SUPPORT FROM OTHER STATE AGENCIES
- OUTREACH TO OTHER STATE DOTS
- STATE-WIDE BULK ENERGY PROCUREMENT
- LEGAL SUPPORT - PROCUREMENT, ENERGY, REAL ESTATE
- MULTI-DISCIPLINE TEAM
- TECHNICAL EXPERTISE
- EXISTING INTERNAL APPROVAL PROCESSES
- SEPARATE ELECTRIC VEHICLE CHARGING

Contact

Eddie Lukemire
Program Manager
elukemire@mdot.maryland.gov
410.865.2770

Renewable Energy Development and Siting Task Force
Oct. 17 2019
12:00 p.m.

Minutes

- Welcome
  - Welcome and attendance taken by Chair Greg Snook at 12:00 p.m.

- From the Chair
  - Snook reminded participants on the call to mute their phones unless they wish to speak in order to avoid background noise
  - Snook asked participants to identify themselves if they wish to speak
  - Snook introduced Terry McGean, Maryland Municipal League (MML) representative

- Presentation by Terry McGean, MML representative
  - Key takeaways
    - McGean explained that aggregate net metering is a way for a single customer to take advantage of a single renewable energy project on multiple facilities that the customer may operate.
      - McGean believes aggregate net metering is limited to local governments and nonprofits, and that it has been used in some locations on off-site solar projects.
    - Regarding the agricultural community, McGean believes it is a nice incentive for renewables and that there could possibly be a way to reconsider aggregate net metering and allow for "medium-scale" offsite solar projects in low-value areas where we are trying to encourage more solar development.
    - McGean went over the Public Service Commission's (PSC) siting authority. MML and the Maryland Association of Counties (MACo) have worked to make sure that the PSC considers local zoning considerations and concerns when siting projects.
    - McGean suggested that when projects are considered at the local level, the municipality, locality or county should automatically be included as an interested party.
    - McGean noted that the offshore renewable energy credit legislation does not include restrictions on the bulk and height of projects.
    - The Bureau of Ocean Energy Management (BOEM) has accepted applications with a range of turbine heights and sizes. McGean recommended that applicants who increase of the height or bulk of a project should be required to go back to the PSC.
  - Snook opened the call up to questions and comments from task force members
    - Snook asked if any of their zoning districts allow solar, or if it is a special exception in most or all of the districts.
      - McGean noted that Ocean City's zoning doesn't really address solar, but they do address wind, and allow it as a special exception.
    - Janet Christensen-Lewis noted one of the issues that they run into is that some projects that are put under aggregate net metering can run into the 1,500

megawatt (MW) cap. Currently, we are about halfway to that cap, but she feels we should fully embrace net metering going forward.

- Joey Chen with the PSC explained that the cap on aggregate net metering is a statutory cap, so he believes that any expansion beyond 2MW would have to be by legislative amends to the law.
    - Chen also touched on expanding the 1,500MW capacity. He thinks part of the challenge is that there is a point where net metering would affect non-net metered utility customers disproportionately in regards to utility revenue losses, which has been an argument utility companies have made. As sales revenue increases, that might create more room to expand the 1,500MW cap.
    - Lewis explained that other states, like Hawaii and California, have pushed back against utilities, and have come up with ways to allow almost unlimited amounts of net metering.
- John Finnerty, representing the solar energy industry noted that it would be good to have a large discussion about net metering.
- Andrew Gohn, representing the wind energy industry clarified that the Maryland PSC is not the final arbiter of siting projects within federal waters. The PSC has jurisdiction over awarding off-shore renewable energy credits in the State of Maryland. Beyond three miles it is federal waters.
    - The prices of off-shore wind are coming down quickly, and he believes over the long-term, Maryland's control over awarding credits will matter less and less. More of the challenge associated with siting will remain under the jurisdiction of the BOEM.
- McGean noted that those projects do not exist without offshore wind renewable energy certificates (ORECs), and the PSC awards and places conditions on the ORECs.

- Presentation by Leslie Knapp, MACo representative
    - Key takeaways
        - Knapp noted that MACo supports solar energy development with the appropriate local, zoning and siting requirements. He recognizes there is a mix of different projects to meet Maryland's renewable energy goals.
        - Knapp explained that MACo would like to see a prioritization of projects where rooftop solar can be incentivized or encouraged to cut down and minimize usage of the utility grid, which can lead to transmission issues.
        - MACo supports the expansion of aggregate net metering, recognizing that there are issues that need to be worked through.
        - Knapp explained the core principles MACo would like to see moving forward.
        - Knapp believes moratoriums have been a more sticky issue, but there is a role for them as long as there is a set plan to have a product at the end of it.
        - Knapp went over aggregate development caps.
            - Some counties have set where they want solar to go within a broad area, and once a certain net acreage is met, then development will stop in the counties (eg. Caroline and Talbot counties).
            - Some counties have looked at limiting individual project caps, and concern has developed over this because if you set something too low, then you cannot have an economically viable project.

        - Knapp feels education is needed about what happens at the broader, more regional level and how the project application works.
    - Snook opened the call up to questions and comments from task force members
        - Chen asked if the counties have looked at what can be done to make it easier to install rooftop at the commercial level, like on larger buildings or apartments.
            - Knapp noted there has been discussion, but that area is preliminary. It could involve building code changes, which would involve the state. He believes the counties would support this initiative
        - Finnerty asked if MACo has heard from counties to see if they are in need of additional resources to help process and review some of the applications that they have seen come across for approval.
            - Knapp said they are just getting into this developing area, and there are some zoning departments in eastern shore counties that have said this is putting additional stress on them, along with adding a resource strain.
        - Lewis noted that solar development will not be static, and the impact on rural counties has to be taken under consideration.

- Snook opened the call up to questions and comments from the public
    - A member from the Chesapeake Physicians for Social Responsibility and the Sierra Club said he is a member of the net metering working group that's been working on community solar for the past three years. From the Sierra Club side, they have worked with Knapp and MACo, farm bureau colleagues, and a number of counties to develop a general consensus on appropriate siting guidelines.
        - He noted that there was a mention about solar zoning. The issue he has encountered in many places is that although counties may want solar to go on commercial and industrial land, the cost of this is 10 and sometimes 100 times greater than the cost of agricultural land. The financial liability of solar projects in Maryland is quite a narrow window, so generally higher cost projects are much harder to afford. If there could be a way to consider identifying appropriate areas and zone appropriately so the cost is feasible, that is worth considering.
        - In terms of the net metering cap, If we support and promote small to midsize projects, like rooftop and parking lot solar, we would inevitably need to increase the cap.
- Snook adjourned the call at 1:01p.m.

Attendees

- Abigail Peryea, Maryland Energy Administration (MEA)
- Allison Cordell, Governor 's Office
- Andrew Gohn, Wind Energy representative
- April King, Maryland Environmental Service (MES)
- Billy Bishoff, Maryland Farm Bureau representative
- Cassie Shirk, Maryland Department of Agriculture (MDA)
- Charles Glass, Maryland Department of Transportation (MDOT)
- David Comis, MEA
- David Tancabel, PPRP, Maryland Department of Natural Resources (DNR)
- Devon Dodson, MDE
- Dorothy Morrison, MDOT
- Eddie Lukemire, MDOT

- Ewing McDowell, Maryland Department of Commerce (Commerce)
- Greg Snook, Chair
- Hannah Schaeffer, Governor's Office
- Interested Stakeholders
- James McKitrick, DNR
- Janet Christensen-Lewis, Maryland Farm Bureau representative
- Jason Dubow, Maryland Department of Planning (MDP)
- Joe Bartenfelder, MDA
- Joey Chen, PSC
- John Finnerty, Solar Energy representative
- Les Knapp, MACO
- Nimisha Sharma, MDOT
- Roy McGrath, MES
- Ryan Opsal, MEA
- Stephen Schatz, Governor's Office

Renewable Energy Siting Task Force

Municipal Concerns and Recommendations

Net Aggregate Metering

- Allows for multiple facilities (meters) of a single customer to take advantage of a single renewable generation project
- Limited to local government and non-profits
- Had been used for some offsite solar projects
- PUA 7-306 restricts use for large scale (>2 MW) projects
- Case 9387 ruling by PSC disallowed breaking up large project into smaller sub-projects
- Recommendation: As an incentive to locate outside high value agricultural areas allow Net Aggregate Metering for large scale offsite renewable energy projects located in "low value" areas such as:
  - Brownfields
  - Unused right of way
  - Other (capped landfills, airport infields)

PSC Siting Authority

- The PSC must consider local zoning considerations and concerns
- However, per the recent Washington County court decision discussed earlier, the PSC remains the ultimate siting authority and therefore local land planning decisions can be overridden
- Recommendation: Local jurisdictions where a generation or transmission project is proposed or that would be significantly impacted by said project should be automatically listed as an interested party to the case and should be granted status as an intervenor upon request

No restrictions on height or bulk of projects

- Offshore Renewable Energy Credit (OREC) enabling legislation placed no restrictions on the height or number of turbines
- PSC ruling awarding ORECs placed no restrictions on the height or number of turbines
- Both projects are now proposing to install turbines significantly taller than those presented to the PSC at the time of the ruling
- PSC OREC order referred visual impact concerns to BOEM. BOEM will issue permits to applicants for a range of sizes and configurations leaving what actually is built completely up to the applicant
- Recommendation: Applicants for construction of any renewable energy plant, on shore or offshore, should be required to submit specific plans showing the height and bulk of their project and any increase in the approved plan should require the applicant to return for a new public hearing with the PSC
- Recommendation: The Clean Energy Jobs Act should be amended to place height restrictions on offshore wind turbines based on their distance from shore

MARYLAND Association of COUNTIES

County Renewable Energy Siting

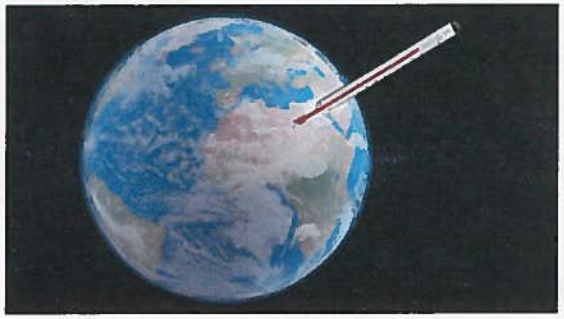
For

Task Force on Renewable Energy and Siting

2019-10-17

Climate Change & Renewable Energy Goals

- Current Climate Change Goal: 25% greenhouse gas reductions from 2006 levels by 2025.
- New Climate Change Goal: 40% greenhouse gas reductions from 2006 levels by 2030 with "aspirational goal" of 80% by 2050
- Renewable Energy Goal: Clean Energy Jobs Act of 2019 requires 50% renewable energy by 2030 (14.5% solar)
- Clean Electricity Goal: Clean and Renewable Energy Standard (CARES) calls for 100% clean electricity by 2040



MACo Position on Solar Energy Siting

- MACo supports solar energy development with local zoning and siting requirements as part of the project approval process.
- MACo recognizes that there needs to be a mix of rooftop, community, and utility-scale solar projects to meet Maryland's renewable energy goals and has established the following prioritization for solar projects:
  - rooftop solar
  - brownfields, grayfields (such as parking lots and warehouse rooftops), industrial areas, and appropriate government-owned lands (i.e., landfills and wastewater treatment plants);
  - open space zoned for solar by local governments, with appropriate protections for prime farmland, forestlands, critical areas and wetlands, environmentally sensitive areas, and areas of cultural or historical importance.

MACo's Record on Solar Energy Siting

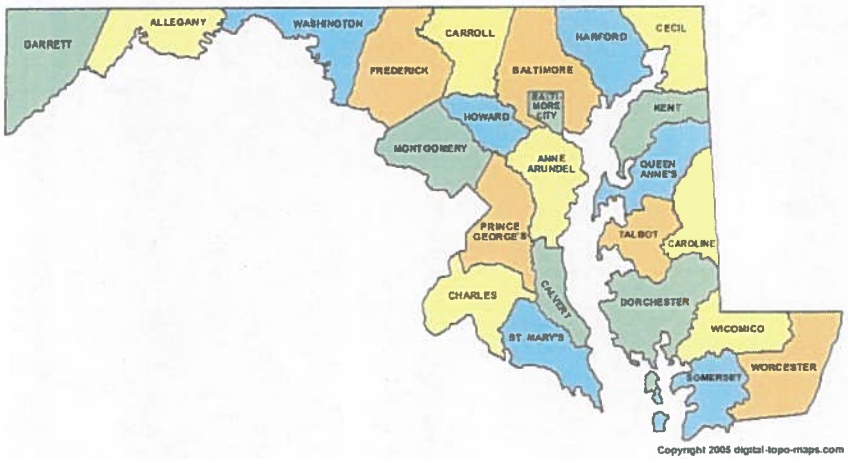
- MACo became engaged on solar siting siting in 2016
- MACo supported HB 1350 of 2017 as a Legislative Initiative
  - Requires the Public Service Commission to give due consideration to a project's consistency with local comprehensive plans and zoning, as well as the efforts of parties to address concerns raised by local governments (Bill passed)
- MACo supported HB 1588 of 2018
  - Removed a concern about unintended consequences of solar development under the "change or mistake" rule (Bill passed)
- MACo supported SB 744 of 2019 as amended by the Senate
  - Would have established a Commission on the Development of a Blueprint for Solar Energy in Maryland (Bill failed in House)

MACo's Record on Solar Energy Siting

- **MACo opposed HB 627/SB 610 of 2019**
  - Would have exempted solar equipment for utility scale solar developments from being subject to a personal property tax and instead required counties to collect an annual fee based on per megawatt capacity (bills failed – withdrawn)
- **MACo has worked with counties on revising and updating their zoning to better manage utility scale solar facilities and advocated for the expansion of net-metering to encourage more mid-size solar projects on landfills or other county-owned lands**
  - Caroline, Harford, Kent, Montgomery, Somerset, Washington

Core Principles

- Renewable energy development similar to other forms of development – recognize has both pros and cons
- County zoning and revenue structures should be respected by both the State and renewable energy developers
- Renewable energy developers should reach out to affected county as early as possible
- Counties should provide certainty of process for renewable energy developers
- State role should be one of collaboration and not preemption
- One size does not fit all!



County Zoning Actions for Utility Scale Solar Projects

- Kent County was the pioneer
- Identify areas (by category or through plats) restrict or discourage solar development
- Identify areas (by category or through plats) to allow or encourage solar development
- Recognize grid connection & capacity
- Stakeholder process (Caroline, Queen Anne's, Talbot)
- Moratorium (Caroline, Talbot, Frederick)
- Aggregate development caps (Caroline, Talbot)
- Project development caps (Frederick)
- Special exception requirement (Washington)
- Industrial zones (Carroll)

Help for Counties

- Education on regional (PJM) grid issues and project application process
- Relevant grid infrastructure data
- Best practices & examples for zoning & siting
- Clarity on State position for solar development
- State incentives & disincentives for solar development
- Renewable energy developer education
- Public education
- Funding
- Technical assistance

Contact Information

Leslie Knapp Jr.

Legal and Policy Counsel

Maryland Association of Counties

lknapp@mdcounties.org

Phone: 410.269.0043

Renewable Energy Development and Siting Task Force
Oct. 31, 2019
2:00 p.m.

Minutes

- Welcome
  - Welcome and attendance taken by Chair Greg Snook at 2:00 p.m.

- From the Chair
  - Snook thanked members for providing input
  - Snook noted that our next meeting is scheduled for the afternoon of Nov. 15, which will be a site visit to three solar facilities
  - Snook introduced John Finnerty

- Presentation by John Finnerty, solar energy industry representative
  - David Murray, Executive Director of MDV-SEIA joined Finnerty during the presentation
  - Key takeaways
    - Finnerty noted that their discussion will be based on seeking responsible ways and recommendations for improving the development and siting process for towns, counties, the Maryland Public Service Commission (PSC), the industry, as well as various stakeholders.
    - Statewide, we are generating about 60% and importing about 40%.
    - To date, U.S. has deployed about 69 gigawatts (GW), and Maryland has about 1.2 GW
    - As we reached the 14.5% target, Finnerty said we can expect an equivalent of 20,000 positions in Maryland
    - It was explained that the 14.5% target is in-line with national goals
      - This summer SEIA announced its "Solar Plus Decade" where the solar industry in the next decade can provide 20% of electric load
    - Murray said our results are visible and accountable. Last year the PSC published a report 'Value of Solar', with a conclusion that solar delivers economic benefits at a rate of 1:4
    - Murray explained that on a per megawatt basis, the residential sector creates the greatest number of local jobs.
      - Most of the money goes into labor, which provides a great deal of benefit to the distribution level.
    - Murray said that community solar is the way that residential customers can access the benefits of solar energy.
      - These projects are usually small in size - no more than 20 acres or under 2 megawatts (MW).
      - This type of solar is appropriate for central Maryland, where there is a high demand for energy.
    - The commercial solar industry ensures that businesses and industrial companies are able to offset their energy savings.
      - This includes aggregate net metering, greater incentives for solar canopies and brownfield sites.

- Murray explained that there are a number of misconceptions of what goes into siting utility scale solar.
- Murray said that 150,000 acres have been zoned in counties' comprehensive plans for commercial and real estate development. If we soley build out the amount of utility scale solar in the clean energy jobs act (CEJA), it will be less than 10% of that.
- Murray noted that it is important to Improve upon our existing infrastructure.

- Snook opened the call up to questions and comments from task force members
  - Jason Dubow, Maryland Department of Planning (MDP) asked for clarification on why mapping is not a good practice and gave Queen Anne's County as an example.
    - Murray explained that we need to look at the injection capacity to determine which sites are best for project deployment. Proximity to transmission lines is important, but not the single most important factor. If you can site a project close to transmission lines, it does not mean the project is always feasible from a transmission injection capacity perspective.
      - Snook asked if there is a way for power companies to identify where these projects can be injected into the grid.
        - Murray noted that he has heard you have to go to both PJM and the utility (facility or interconnection studies). It is such a dynamic process, so it takes the power company a couple years to identify where the transmission injection capacity is.
  - Janet Christensen-Lewis said that cropland is not equated to prime farmland. Depending on where you are, less than 50% of the cropland in Maryland is considered prime.
    - Secretary of the Maryland Department of Agriculture (MDA), Joe Bartenfelder noted that it depends on what your definition of prime farmland is. You can have grazing land as prime farmland. You can have prime and productive soils and still have prime farmland.
  - Lewis pointed out that the acres of agricultural land we have in preservation is below what our target is, and that is due to the amount of money available.
  - Lewis asked what the conditions are for someone to return a solar facility back to productive farmland instead of just turning over a lease to a new leaseholder or upgrading the solar facility with better technology.
    - Murray said that it is a case-by-case basis and it is the choice of the landowner. In terms of decommissioning, solar can be taken out and the land can be returned to farmland.
    - Finnerty added that with existing plants and facilities (conventional generators) that are coming offline, they could be potential interconnection points in the future. The industry does not have many ground arrays that have been in service for more than 10 or 15 years that would be candidates for removal at this point.
  - Lewis does not believe 25% is a reasonable capacity factor.
    - Murray said rooftop solar does have a lower capacity factor, but utility scale solar projects in this region do have a capacity factor around 25%, which has to do with the tracking factors and the types of modules used.

- David Tancabel said for newly installed, 25% is generally the capacity factor used in Maryland, but numbers are adjusted as they look at the issue.

- Presentation by Andrew Gohn, wind energy industry representative
  - Key takeaways
    - Gohn noted that there are four major utility scale projects in the state, which are all in Garrett County: Roth Rock, Fair Wind, Criterion, and Fourmile Ridge.
      - Garrett County does not have local zoning control, but instead was able to establish setbacks and other stipulations regarding conditions for permitting wind projects in Maryland state law.
    - He said there are three manufacturing facilities serving the wind industry in Maryland.
      - Offshore wind would be expected to greatly expand that manufacturing base.
    - Gohn explained in some cases, projects are merchant, where it sells into PJM Interconnection directly. Others have long-term power purchase agreements with offtakers.
    - Gohn said that there are two community projects in the state: Crisfield wastewater treatment and the Talbot County Department of Public Works.
    - He noted that land based wind permitting does go through the certificate of public convenience and necessity (CPCN) process.
    - Gohn said that in offshore wind permitting, federal waters begin 3 nautical miles offshore.
    - He explained that, after securing leases and the ability to do site assessment activities, there is a secondary process that leads to the ability to deploy actual wind turbines, under construction operations plans.
      - This requires a full national environmental policy act (NEPA) review. This is when interested stakeholders should weigh-in. Once the environmental impact statement is complete, they can proceed to actually deploy projects.
    - He also said that the wind energy industry brings tremendous developer interest, and it is expected to develop into a trillion dollar industry.
    - Gohn explained that the U.S. Wind project is now proposing to build 269MW versus the 248MW that they have an offshore wind renewable energy certificate (OREC) order for.
    - He said project developers are aiming to have 12 projects operational by 2026, totaling 7,470MW.
    - Gohn recommends that Maryland continues the process with The Bureau of Ocean Energy Management (BOEM) of citing additional offshore wind areas further out to sea to continue having space to deploy new projects.
  - Snook opened the call up to questions and comments from task force members
    - Joey Chen with the PSC noted that the last federal auction in Maryland for a wind energy area offshore was held in 2014, and he cannot see where on BOEM's website there are plans to have another auction for additional areas. Chen asked how often this happens and how long it would take to get the process moving of identifying additional areas.
      - Gohn explained that a BOEM report indicates that Marland officials have expressed interest in establishing additional lease areas. It does take

significant time, and given the timelines under the clean energy jobs act, it is important to proceed as quickly as possible.

- Snook asked how many miles offshore are the Maryland wind farms located.
  - Gohn said that the closest lease area is sited 10 nautical miles from Ocean City, but that the nearest proposed project is 17 miles from shore.
- Terry McGean asked if the Virginia projects are considered commercially viable.
  - Gohn said he has no reason to think that the project wouldn't happen. Dominion is not a member of the American Wind Energy Association though, so he doesn't know the definite answer.
- Lewis asked if the announcement by Orsted in terms of downgrading the amount of energy coming from offshore wind through the blockage and weight has an impact on the industry.
  - Gohn said he doesn't think it has been long enough since that announcement to see if it has had an impact on the industry, so he is not sure of the answer.

- Snook opened the call up to questions and comments from interested stakeholders
  - No interested stakeholders had questions or comments.

- Snook adjourned the call at 2:59 p.m.

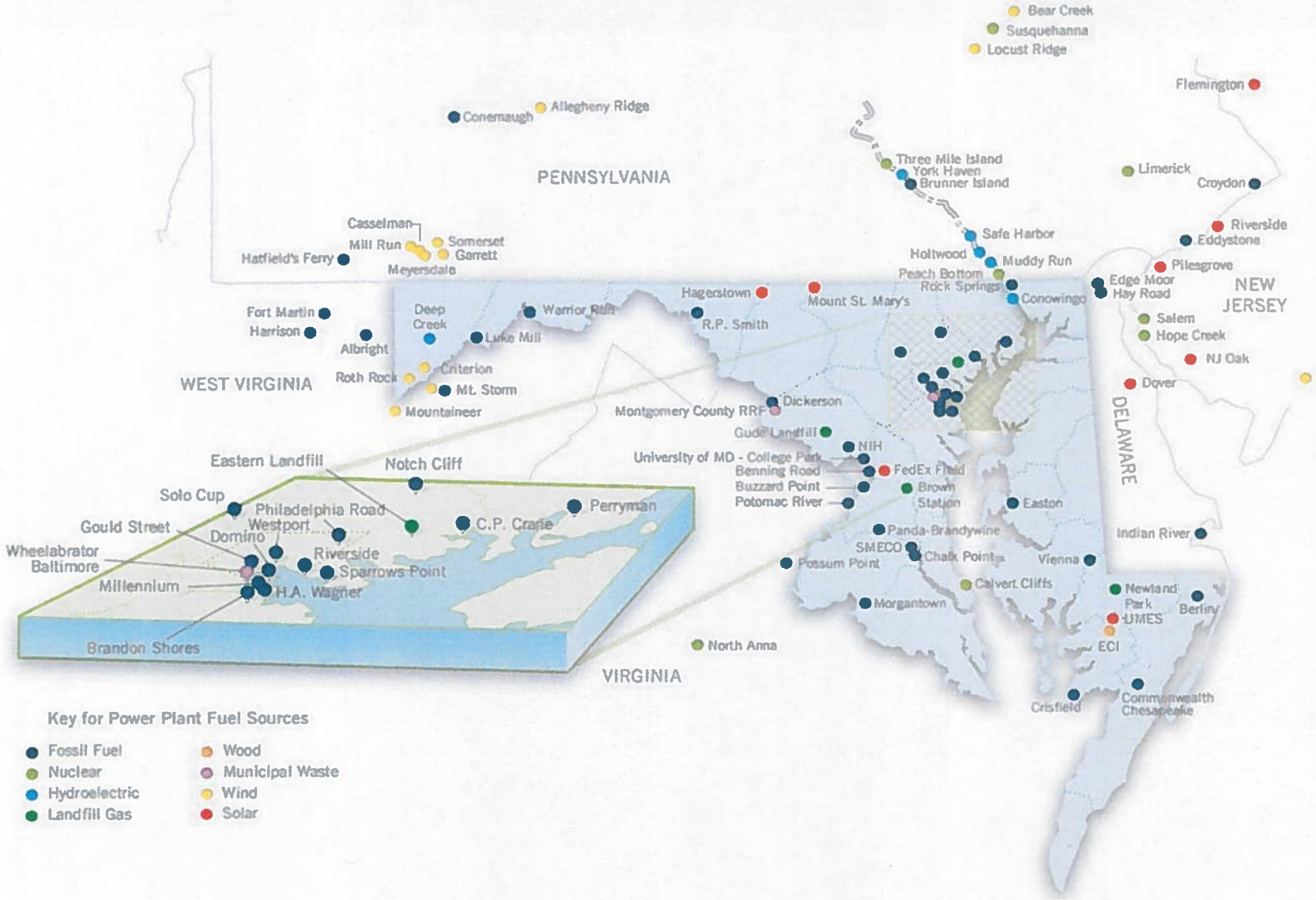
Attendees

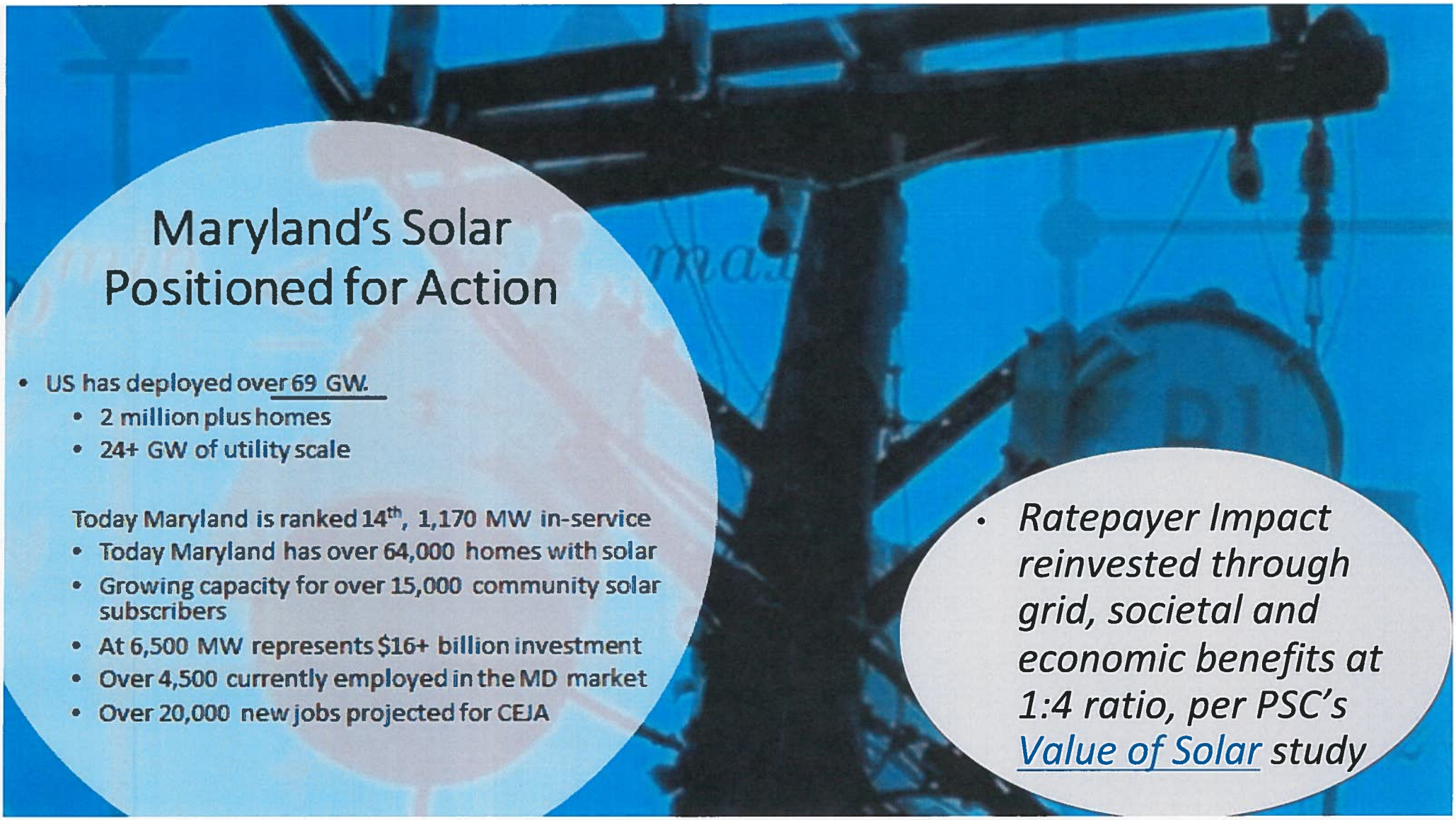
- Allison Cordell, Governor 's Office
- Andrew Gohn, Wind energy representative
- April King, Maryland Environmental Service (MES)
- Billy Bishoff, Maryland Farm Bureau representative
- Cassie Shirk, MDA
- David Comis, Maryland Energy Administration (MEA)
- David Tancabel, PPRP, Maryland Department of Natural Resources (DNR)
- Devon Dodson, Maryland Department of the Environment (MDE)
- Earl Lewis, Maryland Department of Transportation (MDOT)
- Eddie Lukemire, MDOT
- Eric Hoffman, (MEA)
- Ewing McDowell, Maryland Department of Commerce (Commerce)
- Greg Snook, Chair
- Hannah Schaeffer, Governor's Office
- Interested Stakeholders
- James McKitrick, DNR
- Janet Christensen-Lewis, Maryland Farm Bureau representative
- Jason Dubow, Maryland Department of Planning (MDP)
- Joe Bartenfelder, MDA
- Joey Chen, PSC
- John Finnerty, Solar Energy representative
- Les Knapp, MACo
- Nimisha Sharma, MDOT
- Roy McGrath, MES
- Ryan Opsal, MEA
- Stephen Schatz, Governor's Office
- Terry McGean, MML representative

Solar Industry Perspective

Task Force on Renewable Energy Development and Siting

John Finnerty, Standard Solar
David Murray, MDV-SEIA
10/31/19


Bear Creek
Susquehanna
Locust Ridge
Flemington
Conemaugh
Allegheny Ridge
PENNSYLVANIA
Three Mile Island
York Haven
Brunner Island
Limerick
Croydon
Riverside
Eddystone
Pilesgrove
Casselman
Mill Run
Somerset
Garrett
Meyersdale
Hatfield's Ferry
Safe Harbor
Holtwood
Muddy Run
Peach Bottom
Rock Springs
Conowingo
Edge Moor
Hay Road
NEW JERSEY
Salem
Hope Creek
NJ Oak
Dover
Hagerstown
Mount St. Mary's
Fort Martin
Harrison
Albright
Deep Creek
Luke Mill
Warrior Rtn
R.P. Smith
WEST VIRGINIA
Roth Rock
Criterion
Mt. Storm
Mountaineer
Montgomery County RRF
Dickerson
Gude Landfill
DELAWARE
NIH
University of MD - College Park
Benning Road
FedEx Field
Buzzard Point
Brown Station
Potomac River
Easton
Eastern Landfill
Notch Cliff
Solo Cup
Philadelphia Road
Perryman
Gould Street
Westport
Domino
C.P. Crane
Wheelabrator Baltimore
Riverside
Sparrows Point
Millennium
H.A. Wagner
Brandon Shores
Panda-Brandywine
Indian River
SMECO
Chalk Point
Possum Point
Vienna
Calvert Cliffs
Newland Park
Berlin
UMES
Morgantown
ECI
North Anna
VIRGINIA
Crisfield
Commonwealth Chesapeake
Key for Power Plant Fuel Sources
Fossil Fuel
Nuclear
Hydroelectric
Landfill Gas
Wood
Municipal Waste
Wind
Solar



Maryland's Solar Positioned for Action

- US has deployed over 69 GW.
  - 2 million plus homes
  - 24+ GW of utility scale

Today Maryland is ranked 14th, 1,170 MW in-service

- Today Maryland has over 64,000 homes with solar
- Growing capacity for over 15,000 community solar subscribers
- At 6,500 MW represents $16+ billion investment
- Over 4,500 currently employed in the MD market
- Over 20,000 new jobs projected for CEJA

- *Ratepayer Impact reinvested through grid, societal and economic benefits at 1:4 ratio, per PSC's Value of Solar study*

Solar Workers are not only on Rooftops!

- Electricians
- Material Handlers
- Heavy Equipment Operators
- Lawyers and paralegals
- Finance professionals and lenders
- Office administrators
- Marketing specialists
- Web and social media managers
- Project managers
- Delivery and freight logistics
- Environmental specialists
- Landowners
- Land surveyors
- Personnel managers
- Education professionals
- Policy specialists
- Supply chain specialist
- Operations technicians
- Operations managers
- Manufacturer's representatives
- Conference planners
- Construction safety specialists
- System designers
- Project engineers
- Electrical engineers
- Structural engineers,
- Civil engineers
- Environmental engineers

- County inspectors
- County planners
- County permit reviewers
- Public utility interconnection reviewers
- Public utility line technicians
- County inspectors
- County planners
- County permit reviewers
- MDPSC staff
- PJM staff

Advancing Maryland with upgrading and building new energy infrastructure.

Messages for the Maryland Clean Energy Center Summit, October 24th 2019

"The cost of doing nothing is huge…Central banks are recognizing the cost of doing nothing …Doing nothing is not an option - however the opportunity of doing something is where we have to be. We are doing it in Md."

•Senator Chris Van Hollen

"Leverage the opportunity around you…It's an awesome time to be in the energy sector".

•Maryland PSC Chairman Jason Stanek

Future is now in Dorchester County

"With its hundreds of thousands of acres of land, Dorchester ranks fourth largest among Maryland's 23 counties; but it will shrink to 14th by 2100 as nearly half the county turns to open water."

Tom Horton, Marylander, writer, teacher 2018 Yale Environment360 film
On the Chesapeake, A Precarious Future of Rising Seas and High Tides

Part 1: Developing & Siting Residential Solar

Residential solar power creates the greatest number of permanent, local jobs on a per MW basis.

Excellent for home generation- offset & backup

-Works well with net metering
-Pathways for net zero
-Ideal for EV charging offset loads
-Paired with storage for added value

Some Siting Challenges

- Roof conditions
- Split Incentives
- Historic preservation concerns
- Shading issues –trees or neighboring structures

Part 2: Developing & Siting Commercial and Community Solar

Community Solar

1. Unlocks solar access to ineligible customers
2. Projects are never more than 20 acres in size (2 MW)
3. Counties are struggling with understanding the value of solar and simply zoning out solar or placing moratoriums on community solar projects

Commercial Solar

1. Commercial rate design makes ROI for solar challenging
2. Access to ANEM can accelerate commercial use of solar
3. Ballasted systems, such as rooftops and parking canopies are common
4. Brownfield sites require considerable local balanced contracting

Part 3: Development & Siting Utility-Scale Solar

Common Misconceptions Around Utility-Scale Solar

1. Solar can be treated like other land uses. By creating "solar zones" we can reach our energy deployment goals while ensuring few residents live close to solar facilities.
2. Once a county permits a large project, developers will flock to the county to build more projects, ie "solar sprawl."
3. Most of the utility-scale projects can be placed on Maryland's brownfields and parking canopies
4. Solar is at odds with the agricultural economy

The subsequent slides dispel each of these myths

Common Concepts/Misconceptions Driving Solar Siting Concerns

1. We can/should treat solar like other land uses and create "solar zones" where we want solar to go

   Fact: Unlike other land uses, solar siting is driven by technical constraints that cannot be mapped.

2. We can/should just put solar on brownfields/landfills/car ports.

   Fact: There is negligible capacity for solar on Maryland's contaminates lands. With supportive policies, the capacity is limited to between 200 to 400 MW statewide.

3. "Solar Sprawl" - Where there is 1 solar farm today, will there be 10 tomorrow?

   Fact: The nature of scarce transmission capacity means that each solar farm that is developed is likely to make it more difficult/costly to fit another solar farm in the same area of the transmission gird.

4. Solar farms will destroy the agricultural economy/way of life.

   Fact: Maryland can meet it's RPS obligations through 2030 with less than 1% of the state's ag land devoted to solar farms with permitting conditions that ensure a net positive impact to local communities

What Constrains Solar Siting?

- Limited carrying **capacity** in Maryland's transmission infrastructure is *the dominant constraint* for siting a solar farm, and it is both **dynamic** and **unmappable**.
- Any efforts to map the desired locations for solar farms **will not reflect the locations** that will actually have room for solar power on the grid.
- Average time of PJM transmission study process from initial application to project energization is **>5 years**.
- PJM interconnection queue shows locations of projects in queue. Due to scarcity of transmission capacity & long PJM process, this effectively reflects the location of most utility-scale solar farms through 2030.
- **Take-away**: Siting policy targeting transmission-level solar needs to be flexible to allow for development where there is transmission capacity.

Transmission Capacity Dictates the Solar Industry

- Proximity to high voltage transmission lines is not sufficient to make a project viable, because room on the transmission lines is scarce and unmappable.

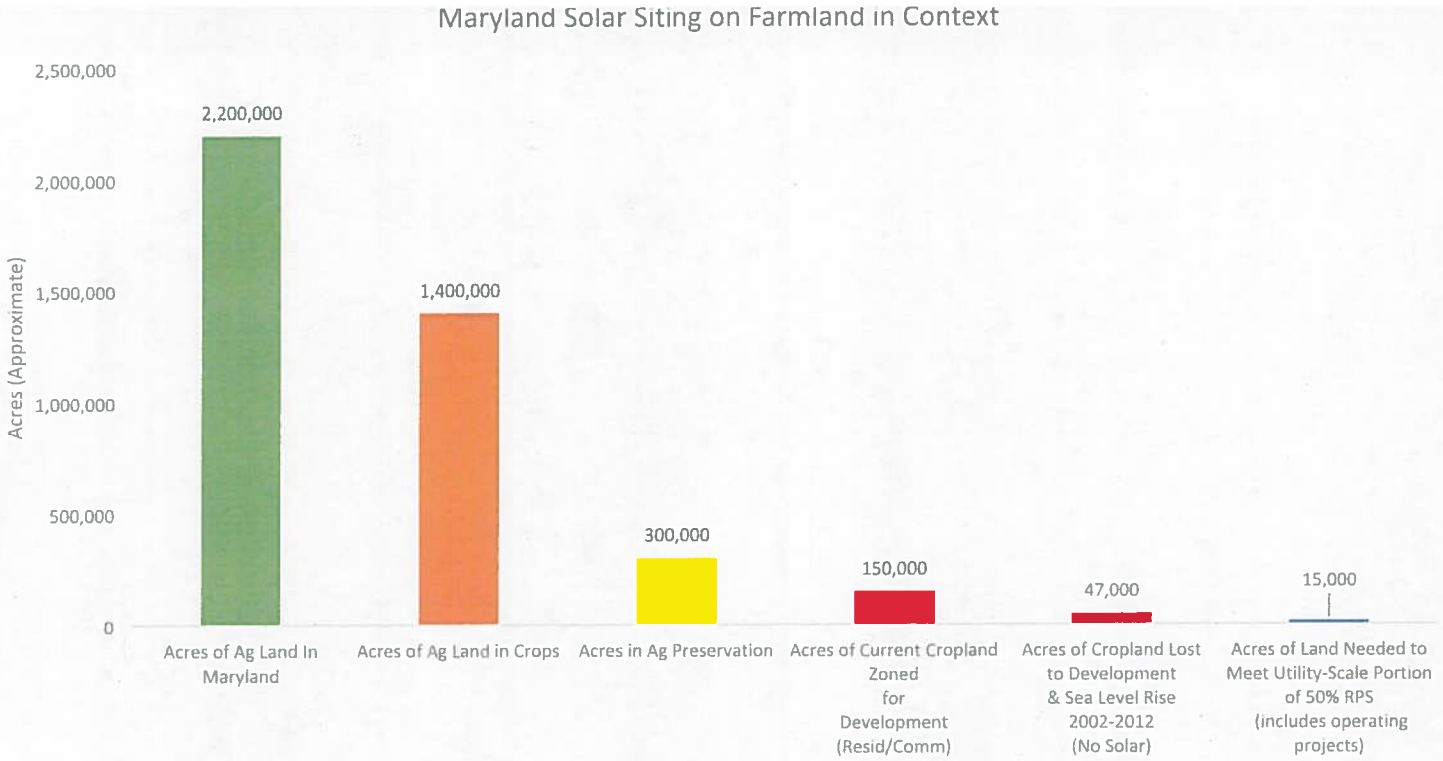
- "Reverse Sprawl:" Solar developers compete over space on the transmission grid, one project can displace another if it is built first!

- Factors external to the industry - such as an industrial facility closing - affect transmission capacity, hence why it takes **years** for the utility to study

What About Solar on Brownfields & Landfills?

- Maryland's solar industry screened two databases totaling over 400 contaminated sites across Maryland (full report at www.mdsolarcoalition.com)
- The opportunity to develop solar on contaminated sites in Maryland is negligible, limited to a range of between ~200 to ~400 MW across the state, assuming enabling legislation.
- Policies designed to incentivize solar development on these sites must address numerous challenges with their commercial viability.
- ***Uncertainty around transmission injection capacity and landowner interest at these sites remains an obstacle even with enabling legislation***.

MD Farmland Development Pressures In Context



- ~Half of Maryland's solar mandate will be met by ~2000 MW of utility-scale solar by 2030. If ~90% of that is developed on farmland, that translates to around 15,000 acres of Maryland farmland used to host solar through 2030.
- In context, Maryland's counties & municipalities have zoned ~150,000 acres of the state's ~1.4m acres of current cropland for residential/ commercial development.

Recommendations for Siting Task Force

1. Provide best practices to towns and counties for education, economic, environmental and technical issues. The VA DMME and University of Virginia now have experts in-house to provide support to counties with this expertise

1. Address barriers and accelerate community and commercial solar deployment through expanding current MEA grant programs, opening ANEM to commercial entities and community solar program changes to incentivize commercial engagement.

1. Adjust NEM program cap to facilitate distributed generation sector growth, increase community solar system size cap to 5 MW

1. Support expansion of residential solar by addressing restrictive covenants, streamline permitting process to reduce soft costs of distributed generation, develop tools to expand solar access to LMI communities

1. Confirm value of solar as a soils restoration tool at degraded soil (ag) sites

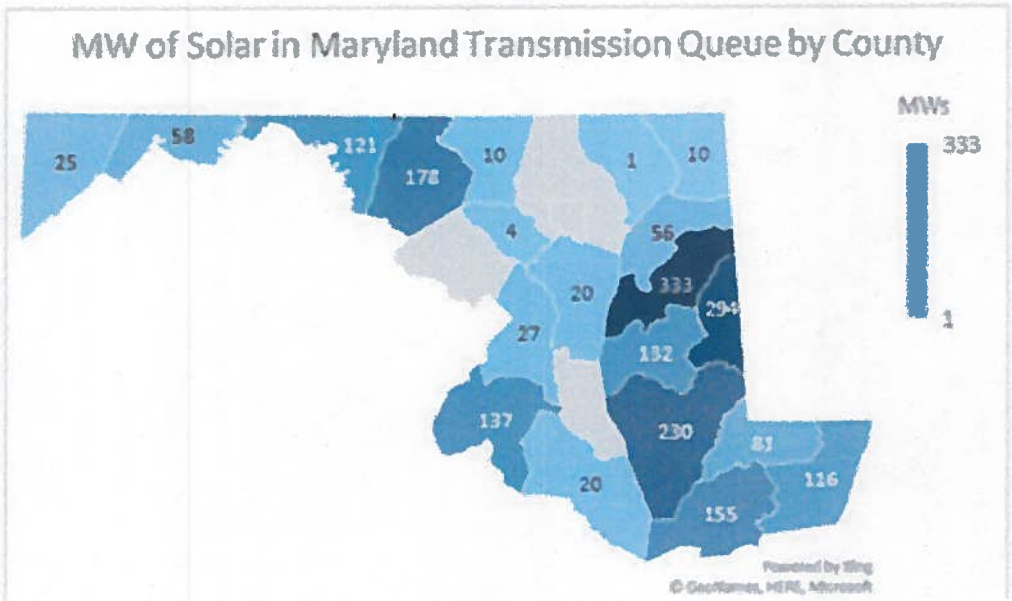
1. PPRP to issue pollinator friendly standards for projects

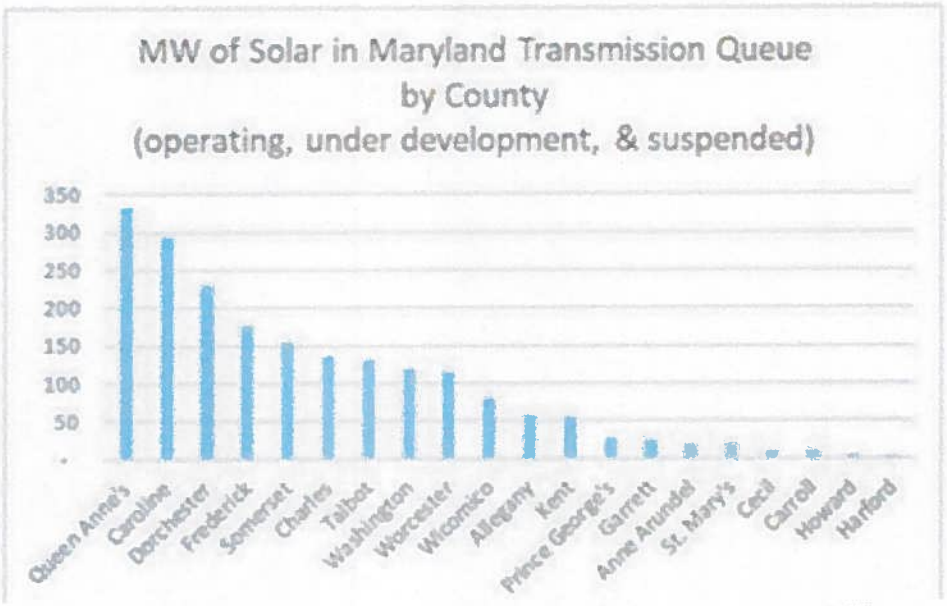
Appendix

1. Where are the large projects in Maryland's queue?
2. How does the CPCN process govern responsible solar siting process?
3. How are local voices heard in the permitting process?
4. How can developers mitigate viewshed concerns?
5. How do I calculate the acreage required based on the size of a project?

Solar MW in Maryland's PJM Queue

There is a total of 1,912 MW of solar in Maryland's PJM queue, which includes 1,269 MW under study, 33 MW under construction, 266 MW suspended projects, 100 MW in pre-construction, and 245 MW that are currently operating.





Our neighbors share similar issues

"Farmland is valuable, and a finite resource. Even if a solar array produces energy for the next 25 years, eventually, a farmer will be able to plant crops again in that field.

We don't want to lose our productive crop ground for good, but we also want to encourage farmers to make the best economic use of their land. We are hopeful that solar, following proper construction standards, can be a competitive economic use for some Pennsylvania farm ground, while preserving the land for future use."

Pennsylvania Farm Bureau letter to Sen. David Argall, Chair, Senate Majority Policy Committee. October 22, 2019

State CPCN Process for Permitting Large Solar Projects

- Projects over 2 MWs (~16 acres) are permitted through the state CPCN process. Projects up-to 2 MW are entirely governed by the local permitting process.
- Department of Natural Resources' Power Plant Research Program (PPRP), on behalf of the PSC, is charged with evaluating the water quality, wildlife, soil, stormwater, health, and economic impacts of each project.
- The CPCN process gives significant consideration for local/county land use preferences in the final determination.
- PPRP can impose any conditions necessary to avoid negative impacts and can recommend against a permit if any negative impacts are deemed to outweigh a proposed project's benefits. Standard conditions include setbacks, planting of vegetative screens, decommissioning requirements and bonding.
- A public utility law judge considers evidence and determines approval or denial of permits on behalf of PSC, though PSC can have final say on appeal.

State Permitting with Significant Local Input

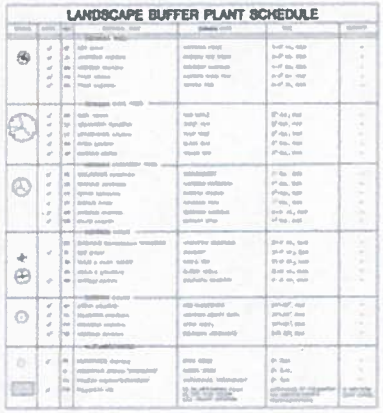
- In 2017, the Maryland solar industry worked with MACo to **strengthen the local voice** in the state's CPCN process, and to date numerous permitting decisions for solar projects that have been permitted or have been rejected for a permit through the CPCN process have mentioned the added weight given to local input and zoning.
- Numerous counties have developed **ordinances** that are **routinely considered** & referenced as part of CPCN permit decisions **by public utility law judges**.
- Maryland counties have taken **varying approaches to participation in the CPCN process**, including:
  - Some counties rely entirely on the state CPCN process vs. a local process
  - Some counties have passed solar ordinances as their expression of input into the CPCN process but have merged the local process into the CPCN process
  - Some counties require projects to go through the local process which then informs their input into the CPCN process
- Open question (especially since key 2019 Maryland court ruling affirming state preemption of local zoning) as to **whether it's appropriate to submit local applications for CUPs** vs. local governments participating in CPCN process as interested parties or intervenors.

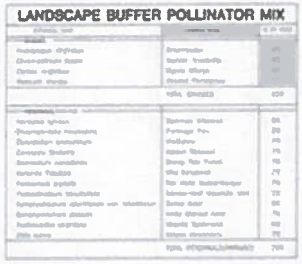
CPCN Process In Practice

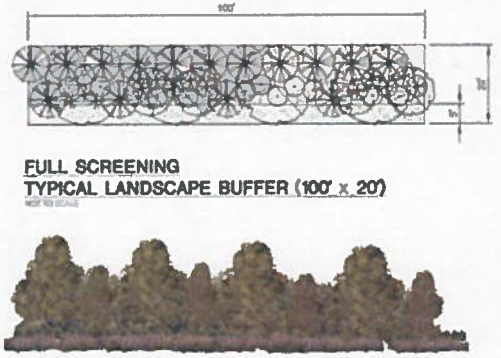
- Forest Conservation Act (FCA) - Solar projects subject to the CPCN process **must comply with the FCA** with the exception of a narrow exemption in statute that allows CPCN solar projects that are not removing forests and that comply with the local Forest Conservation Ordinance to be exempt from mitigation requirements. All other solar projects subject to CPCN must comply with FCA requirements.
- Decommissioning – As a standard condition on all CPCN projects, **PPRP requires that projects be decommissioned and the land restored at the end of a project's life**. The required decommissioning plan must include a financial mechanism (ex. bond) to ensure that decommissioning occurs.
- Vegetative Screening – A common condition across all CPCN solar projects **requires that trees, shrubs, and other vegetation be planted around solar projects** in order to obscure their view from the public. Such conditions often include financial assurances to guarantee screening efficacy.
- Stormwater – Maryland Department of the Environment has guidelines that govern stormwater management for solar farms. Solar projects also typically require National Pollutant Discharge Elimination System (NPDES) stormwater permit coverage and other state regulatory approvals including conformance with stormwater management, sediment and erosion control, and consistency with Critical Areas.

Utility Scale Solar Best Practices - **Screening**

- Screening may be appropriate in some cases, such as mitigating impacts to historic structures or other visually-sensitive receptors
- Consists of a "row" of hedges, short trees or naturalized, native plantings to create "green wall"
- Cost can be significant so usually not applied as blanket approach to entire project perimeter
- PPRP generally requires screening as indicated by local authorities and across from all sensitive receptors/scenic bi-ways







How To Calculate Acres of Solar on Farmland

- Acres of Utility Scale Solar on Ag Land By 2030 =
  - [(**Eligible Retail Power Sales in 2030** x 14.5%) ÷
  - **Solar Net Capacity Factor** ÷ 8760 (no. of hrs. in a year)] x
  - **% of Supply Met by USS on Ag Land** x
  - Acres of Solar per MWac

FORMULA NOTES:

- MWh solar needed by 2030
- Converts MWh to MW
- Limits to solar on ag land
- Converts MW to Acres

- Acres of Utility Scale Solar on Ag Land By 2030 =
  - [(61,760,000 x 14.5%) ÷ 25% ÷ 8760)] x 45% x 8 = **14,718 acres**

- 14,718 acres translates to just over 1,800 MW of solar, which is consistent with what we know about the current PJM transmission queue and process

Overview - Wind Energy in Maryland

Andrew Gohn
American Wind Energy Association
October 29, 2019

AWEA AMERICAN WIND ENERGY ASSOCIATION

AWEA AMERICAN WIND ENERGY ASSOCIATION

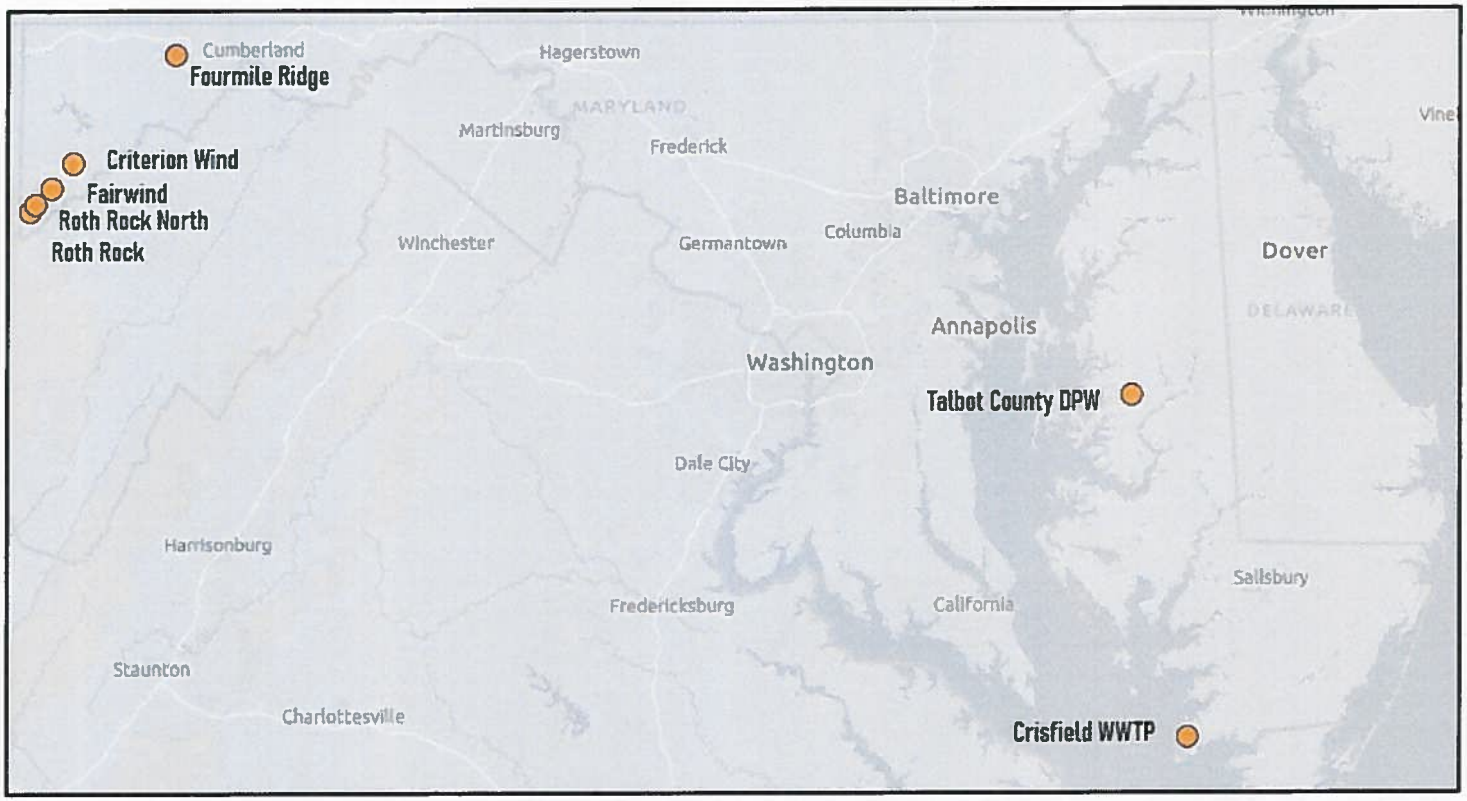
Maryland Land Based Wind:

The U.S. wind industry is a major economic development driver in Maryland. In addition to job creation and billions of dollars in project investment, the wind industry invests heavily in local communities, providing significant revenue in the form of property, state, and local taxes.

- Capital investment in wind projects through 2018*: $408 million
- Annual state and local tax payments by wind projects: $2.5 million
- Annual land lease payments*: $500k - $1 million
- 3 manufacturing facilities serving the land-based wind industry (offshore wind expected to greatly expand this manufacturing base)

*Source: Based on state and national averages from LBNL, NREL

- The first utility scale wind turbine was installed in Maryland in 2010 and there are now 4 major utility scale projects and 2 community projects across the state.



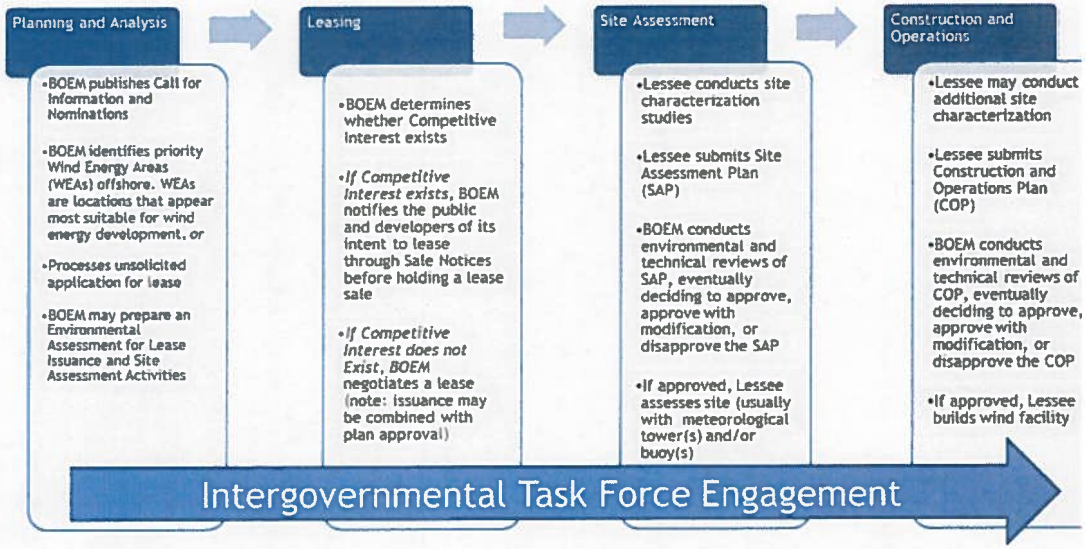
AWEA AMERICAN WIND ENERGY ASSOCIATION

Wind energy projects currently operating in Maryland

Project Name	Total Capacity	Turbine #	Year Online	Developers	Owners	Turbine Mfr	Turbine Model	Power Purchasers
Criterion	70	28	2010	Constellation	Constellation | Unknown	Clipper Windpower Inc.	C93	Old Dominion Electric Cooperative (70)
Fourmile Ridge	40	16	2014	Exelon Wind	ExGen | John Hancock	Nordex USA Inc.	N100/2500	PJM Interconnection (40)
Roth Rock	40	16	2011	Synergics Wind Energy	Elawan Wind	Nordex USA Inc.	N90/2500	Delmarva Power & Light (40)
Fair Wind	30	12	2015	Exelon Wind	Exelon Generation Co.	Nordex USA Inc.	N100/2500	Exelon Corporation (30)
Roth Rock North	10	4	2011	Synergics Wind Energy LLC	Elawan Wind	Nordex USA Inc.	N90/2500	WGES(10)
Crisfield WWTP	0.75	1	2017	Crisfield WWTP	Crisfield WWTP	Aeronautica Windpower	54-750	Crisfield WWTP (0.75)
Talbot County DPW	0.3	3	2010	Tieder Controls	Talbot County DPW	Northern Power Systems	NPS 100	Talbot County DPW

BOEM Offshore Wind Permitting

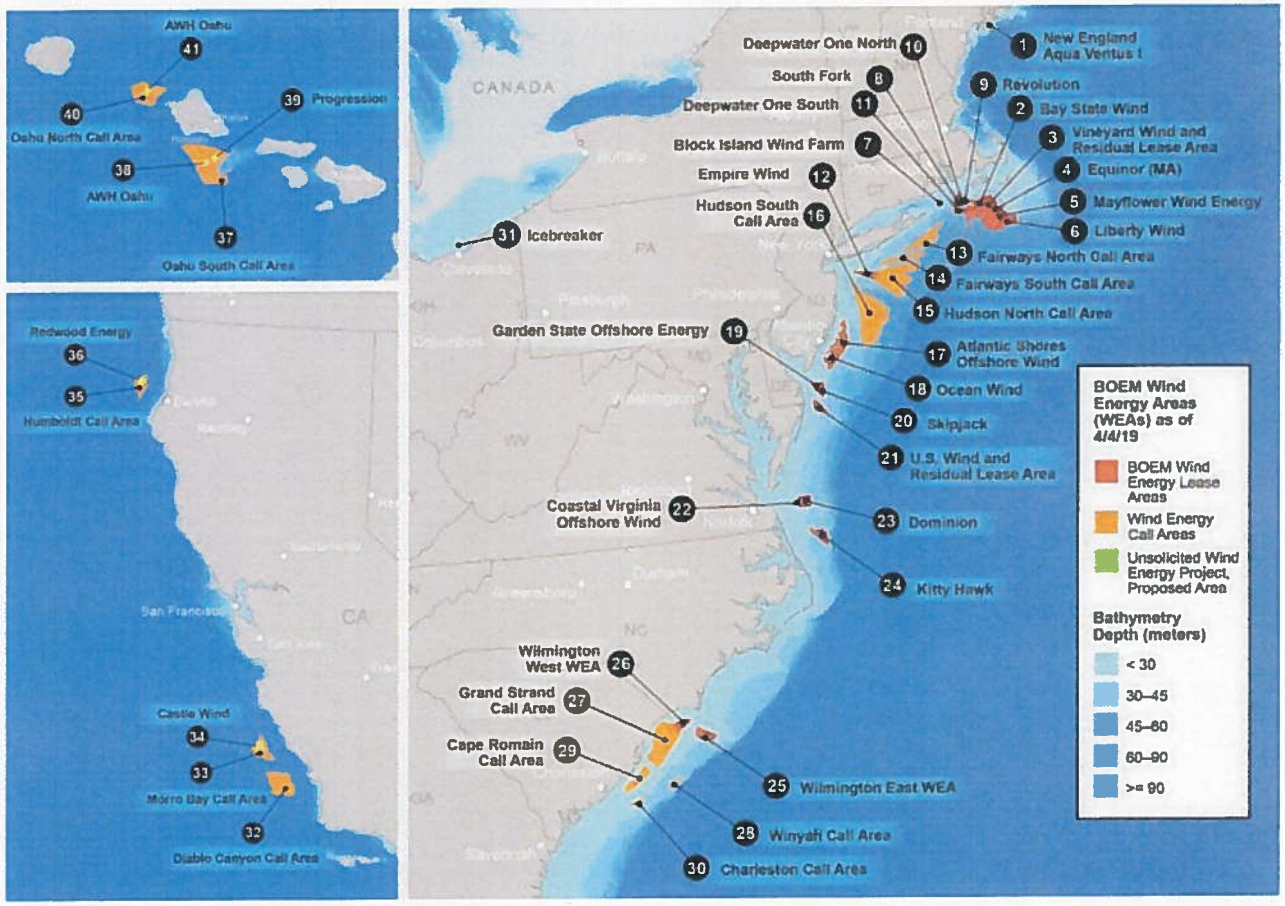
- BOEM seeks public engagement throughout the multi-stage permitting process.
  - Intergovernmental Renewable Energy Task Force meetings
  - Call for information on the proposed lease area
  - Proposed sale notice on the lease area
  - NEPA public comment periods
  - NEPA public meetings
  - Regional Fisheries Council Meetings
- BOEM has already held over 100 public meetings and accepted public comment and other public input regarding offshore wind development in federal waters.



AWEA AMERICAN WIND ENERGY ASSOCIATION

15 leases issued for US waters; more planned for future auctions.

In a December 2018 offshore wind lease auction, three separate parcels in New England each went for $135 million.

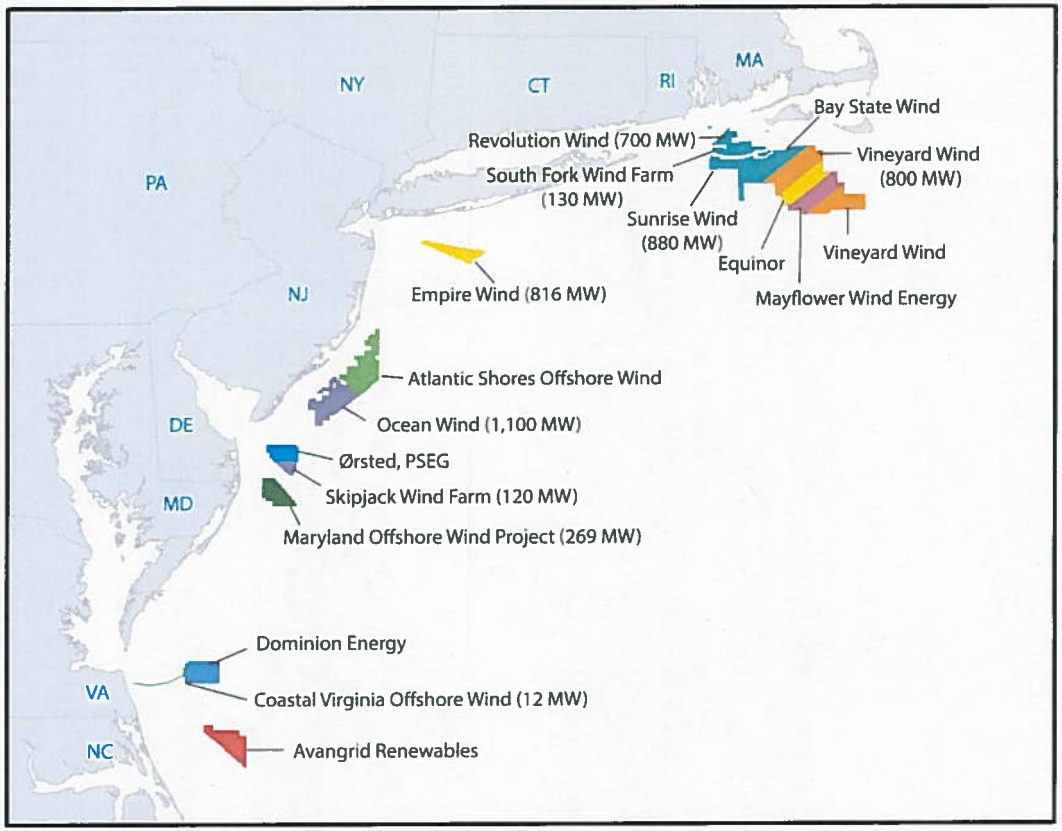


Source: DOE, NREL, 2018 Offshore Wind Technologies Market Report

AWEA AMERICAN WIND ENERGY ASSOCIATION

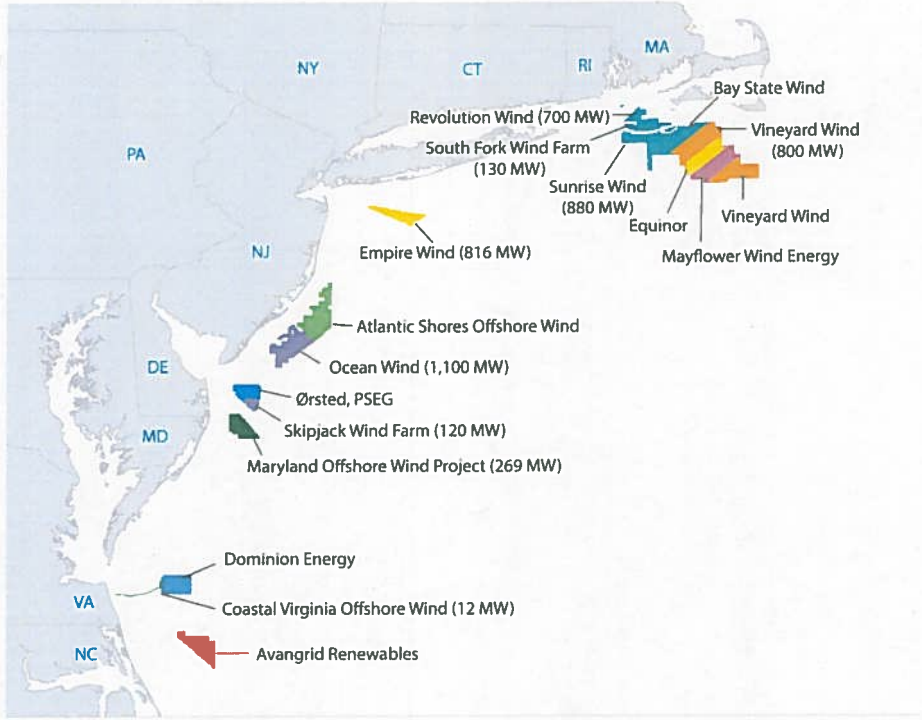
Offshore Wind Activity

- U.S. total offshore wind pipeline currently sits at 26,000 MW
- Project developers aiming to have 12 projects totaling 7,470 MW operational by 2026.



State Offshore Wind Activity

- Maryland awarded ORECs to two projects (368 MW) in 2017
- Massachusetts issued first large-scale solicitation in 2017; selected 800 MW Vineyard Wind project in May 2018
- Rhode Island selected 400 MW from Revolution Wind in May 2018
- Connecticut selected 300 MW from Revolution Wind in June & Dec 2018
- New Jersey issued 1,100 MW solicitation in Sept 2018; Selected 1,100 MW Ocean Wind Project in June 2019
- New York issued 800 MW solicitation in Nov 2018; Selected 880 MW Sunrise Wind and 816 MW Empire Wind in July 2019



AWEA AMERICAN WIND ENERGY ASSOCIATION

Offshore Wind Project Timelines

Project Name	Project Capacity (MW)	Project Owner(s)	Project Location (BOEM Lease Area)	Offtake	Estimated Start of Construction	Estimated Year Online
Skipjack Wind Farm	120	Ørsted US Offshore Wind	Delaware	Maryland OREC award	2021	2022
Maryland Offshore Wind Project	269	U.S. Wind Inc	Maryland	Maryland OREC award	2021-2022	2022
Vineyard Wind	800	Copenhagen Infrastructure Partners; Avangrid Renewables	Massachusetts	Eversource Energy, National Grid, and Unitil Corp	2019-2020	2022-2023
Ocean Wind	1,100	Ørsted US Offshore Wind	New Jersey	New Jersey OREC award	2020-2021	2024
Empire Wind	816	Equinor	New York	NYSERDA	2022	2024
South Fork Wind Farm	130	Ørsted US Offshore Wind; Eversource Energy	Rhode Island/ Massachusetts	Long Island Power Authority	2021	2022
Revolution Wind	704	Ørsted US Offshore Wind; Eversource Energy	Rhode Island/ Massachusetts	National Grid (400 MW); Eversource Energy & United Illuminating Co (304 MW)	2020-2021	2023
Sunrise Wind	880	Ørsted US Offshore Wind; Eversource Energy	Rhode Island/ Massachusetts	NYSERDA	2022	2024
Coastal Virginia Offshore Wind	12	Dominion Energy; Ørsted US Offshore Wind	Virginia	Dominion Energy	2019	2020
Unnamed Dominion Energy Project	2,640	Dominion Energy	Virginia	Dominion Energy	2022	2024-2026

AWEA AMERICAN WIND ENERGY ASSOCIATION

U.S. offshore wind = infrastructure, investment in the U.S.

Among other commitments, offshore wind developers have announced the following investments:

- **$472 million** paid to the U.S. taxpayers for existing offshore federal leases
- **$10 million** to accelerate an offshore wind supply chain in Massachusetts;
- **$40 million** for investments in Rhode Island ports, supply chain development and workforce development;
- **$100 million** to improve the marine terminal in New Bedford, Massachusetts;
- **$22.5 million** to upgrade the Port of New London in Connecticut;
- **$76 million** for steel fabrication and **$40 million** for port upgrades in Maryland;
- **$35 million** for an offshore wind gearbox testing facility at Clemson University;

AWEA AMERICAN WIND ENERGY ASSOCIATION

Contact Information

Andrew Gohn –
agohn@awea.org
202-320-8385

Agenda
Task Force on Renewable Energy Development and Siting Tour

November 15, 2019
11:45 AM – 4:30 PM

The Task Force will tour and discuss the following locations:

1: Wye Mills Solar, Queen Anne's County

Wye Mills Solar Project, with a capacity of 13.6 MW, serves Johns Hopkins Medicine's East Baltimore Campus. The solar installation features more than 40,000 solar panels across a 97-acre plot of land.

2: Maryland Environmental Service Headquarters, Anne Arundel County

At Maryland Environmental Service headquarters in Millersville, Maryland, a 600KW solar array over parking lots generates renewable energy on the site.

3: Annapolis Solar Park, Anne Arundel County

The Annapolis Solar Park has a production capacity of 18 mega-watts of electricity from the 55,000 solar panels on the 80-acre closed Annapolis Landfill. Power purchasing agreements with the City of Annapolis, Anne Arundel County, and the Anne Arundel County Board of Education support the project.

Renewable Energy Development and Siting Task Force
Nov. 15, 2019
11:45 a.m. - 4:30 p.m.

Minutes

- Wye Mills Solar, Queen Anne's County

  Wye Mills Solar Project, with a capacity of 13.6 megawatts (MW), serves Johns Hopkins Medicine's East Baltimore Campus. The solar installation features more than 40,000 solar panels across a 97-acre plot of land.

  - Tesla gave an overview of their solar facility at Wye Mills Solar and members asked questions
  - It was noted that virtual net metering is 13.6MW, so the facility generates 21 million KW-hours.
  - The solar facility powers Johns Hopkins, and provides credits towards their bill.
  - The panels are tilt access, and are rated for up to 50mph winds.
  - Stephen Schatz asked what dictates the height off of the ground.
    - Tesla said it depends on the weather, and they are spaced out based on the shade analysis.
  - Janet Christensen-Lewis, Maryland Farm Bureau representative was curious about the buffer. The trees were short for being planted in 2016.
    - Tesla said they collaborated with the county and based on that, they allowed the growing of native smaller trees, and some bushes. Next season they will work to address the buffer.
  - David Comis, Maryland Energy Administration (MEA) asked if the ground cover was natural.
    - Tesla said it is adjacent to a wetland, so they had to bring in dirt for certain portions. Most of the ground cover is natural. They also mentioned that there is no intention to make it pollinator friendly.
      - John Finnerty, solar energy industry representative said pollinator friendly plantings are built in now, but it probably wasn't available when Tesla had the plans approved years ago.
  - Comis asked if the steel structures go into the ground or if they're in cement.
    - It was noted that they are driven by post into the ground (minimum of ten feet) and can be removed.
  - Lewis asked about their lease.
    - Tesla explained that the lease is 20 years and it can go back to farmland, but there is an option for the owner to buy the arrays and negotiate with the University. The land does not belong to Johns Hopkins. If they are not interested in purchasing, they have 3-5 years to negotiate the contract. If they do not want to purchase, they will recycle the panels. The recycling is done in China.
      - Lewis said there's no guarantee it will go back to farmland.
        - Helen Stewart, power plant research program (PPRP) said it no longer can go back to farmland if the land is exempted from wetland permits, which is the Maryland Department of the Environment's (MDE) policy.

- Jason Dubow, Maryland Department of Planning (MDP) asked if they are going to bring in storage batteries.
    - Tesla explained that they could do that upgrade, and Tesla is working on utility grade batteries, which can store energy at night time when it's cheaper. They have had success with this in the north east, along with the Island of Oahu, which is almost completely battery powered. Several batteries can be installed in a small location.
        - PPRP said they have not had a developer do that yet.
- Schatz asked if they're involved in the community.
    - Tesla noted that they are involved on a larger scale and focus on giving to areas in need, like Puerto Rico. Tesla does not do outreach, customers typically come to them.

- Maryland Environmental Service (MES) Headquarters, Anne Arundel County

  At Maryland Environmental Service headquarters in Millersville, Maryland, a 600 kilowatt (KW) solar array over parking lots generates renewable energy on the site.
    - MES gave an overview of their solar canopies and solar field.
    - The ground mounted system was installed in late 2008. The term of the purchase power agreement (PPA) is 15 years. The parking array was installed in 2016, and the term of that PPA is 15 years.
    - There are 1,488 panels in the solar field, and seven canopies (930 solar modules), along with one dual charging station.
    - Roy McGrath, Director of MES asked if there's changes on runoff regarding carport solar.
        - His staff explained how runoff is managed, like ensuring the gutters are placed in the right direction.
    - In May 2018, MES added a beehive to further help in the process of pollination. In June 2018, MES created two planting beds to accommodate native plantings, known as pollination areas. In Sept., they replaced existing turf areas within the confines of the solar field with native and naturalized clover habitat.
    - Stewart asked if they would ever consider batteries.
        - MES said they would consider it, but would need to look at the economics. It has not yet come up.
    - Dubow asked what percent of the parking lot is covered with solar.
        - MES said about 75% of the parking lot is solar.
    - Stewart asked how durable the panels are, and what happens when it snows.
        - MES explained that they are very durable. Maintenance from Constellation monitors regularly, and the snow typically melts quickly on the black panels.
    - Comis asked if there is a standby fee.
        - MES said no, they pay off the grid for whatever is not generated from solar.
    - Finnerty asked if there is a certain type of vehicle that cannot or should not go through the solar covered parking area to avoid damage.
        - Staff said the maximum height is 12 feet, which is not affected by MES' own fleet vehicles.
    - Lewis asked if they would consider placing more solar to get to 100%.
        - Director McGrath noted that they are in the process of extending their building, where they envision adding additional canopies.

- Annapolis Solar Park, Anne Arundel County

  The Annapolis Solar Park (ASP) has a production capacity of 18MW of electricity from the 55,000 solar panels on the 80-acre closed Annapolis Landfill. Power purchasing agreements with the City of Annapolis, Anne Arundel County, and the Anne Arundel County Board of Education support the project.

  - The Annapolis Solar Park gave an overview of their facility.
  - The landfill is capped, not lined. The property is 300 acres, which is owned by the City of Annapolis. There are seven plants - five 2MW and two 1MW.
  - MDE was a critical component of the project.
  - There are 52,000 panels, and trees are not allowed to grow on the capped landfill. ASP takes ground sampling twice a year along with gas collection samplings on a quarterly basis.
  - Comis asked if they will use methane.
    - ASP said no, just flare gas because it is not a constant, steady flow. There is not sufficient energy, as it's decreasing.
  - Snook asked if they have a lot of fluctuations on panels.
    - ASP noted that movement or settling is very minor. The plant has been operational since Sept. 2018. There are concrete supports because they cannot penetrate the cap.
  - Comis asked if they track the wind speed, direction and temperature.
    - It was explained that they are mostly interested in ambient temperature to relay the panel temperature. The panels have thermometers.
  - Snook asked if they can tell which panels are not producing, and replace them when needed.
    - ASP said yes, each array that goes into the combined box is monitored.
  - Lewis asked what the capacity of the panels are.
    - The capacity is about 345 each. Each array and string has 28 panels. It is a 1,500 volt system.
  - Schatz asked if they specialize in building on top of landfills.
    - ASP noted that it is a unique challenge. It is the first one they have completed on top of a landfill, and the first 1.5KW plant. It is currently the largest in the U.S.
  - ASP said they have not seen a lack of wildlife. A lot of birds, bees, and other wildlife come in and out often.
  - A challenge was the slopes. 5% was the limit, so the placement cannot be too steep. Not all of the landfill is used due to steeper slopes.
  - Daivd Tancabel, Director of the power plant research program (PPRP) at the Maryland Department of Natural Resources (DNR) asked why they split it up into give-six groups.
    - ASP said to give different opportunities to different entities. All seven are net metered.
  - Finnerty asked if the wiring feeding into inverters are all on the surface.
    - ASP answered yes.
  - Schatz asked if there are issues with them being so low to the ground.
    - ASP noted that they have not had issues.
  - Stewart asked if they need a certain ground cover since it's a landfill.
    - ASP said yes, since it is eroding.
  - Comis asked if there were lessons learned from building on a landfill.
    - They explained that if you have flares, make sure you have the space to maintain them. They have a seven foot clearance around each one, which takes away

from the amount of space for panels. They also mentioned to make sure you negotiate mowing beforehand.
    - Dubow asked if it was hard to find offtakers for the energy.
        - ASP said they had some challenges, but the incentives were there. It was a strange concept to some people.
    - Schatz asked about the importance of having the city or county be their client.
        - It was explained that it is a 30 year agreement.
    - Stewart asked what happens at the end of the life of the panels. Do they decommission the plant, revamp or postpone the economic life of the plant.
        - ASP said it is not a very expensive plant in terms of maintenance. At the end they can decide to extend the life or not. They return the land to the same condition they arrived in.
    - Lewis asked how they dispose of the panels.
        - They said they recycle the photovoltaic panels and then need to find an industry or solution for the next step, which is a problem for the industry as a whole.
    - ASP has not yet looked into battery storage.

Attendees

- Abigail Peryea, MEA
- Allison Cordell, Governor 's Office
- Billy Bishoff, Maryland Farm Bureau representative
- Bob Sadzinski, PPRP, DNR
- Dan Hurley, Public Service Commission (PSC)
- David Comis, MEA
- David Tancabel, PPRP, DNR
- Greg Snook, Chair
- Hannah Schaeffer, Governor's Office
- Helen Stewart, PPRP, DNR
- Janet Christensen-Lewis, Maryland Farm Bureau representative
- Jason Dubow, MDP
- Michael Richard, PSC
- John Finnerty, Solar energy industry representative
- Nimisha Sharma, MDOT
- Roger Austin, PSC
- Roy McGrath, MES
- Stephen Schatz, Governor's Office
- Terry McGean, MML representative