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# Smoothing the Path to Solar:

Findings from Comparative Case Studies on Utility Scale Solar Permitting in Virginia

Kevin Woram



**ENERGY TRANSITION INITIATIVE**  
UNIVERSITY OF VIRGINIA



**UNIVERSITY**  
*of* **VIRGINIA**

Weldon Cooper Center  
for Public Service



# How can Virginia make its solar permitting process easier to navigate and engage with for all stakeholders?

This report offers case study observations that could be informative in efforts to create a more predictable, efficient, and expedient permitting process for utility-scale solar facility construction in Virginia.

## ABOUT THE AUTHOR

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**Kevin Woram** worked as a PhD Plus intern as a team member of the Virginia Solar Initiative at the Weldon Cooper Center. He is currently working on a PhD in History at the University of Virginia and hopes to eventually become a professor of ancient history.

*The PhD Plus internship program provides PhD students the opportunity to pursue an internship with a University office or external partner. The intent of these internships is to engage and develop students' professional competencies beyond those typically addressed within their academic training. The goal of the program is to provide students with substantive exposure to hands-on, real world projects that will broaden their skillset and their career options.*

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## TABLE OF CONTENTS

Summary .....	1
Scope .....	2
Methodology and Sources .....	3
Background .....	3
Delays in the State Permitting Process .....	5
Erosion and Stormwater Management .....	9
Rural Concerns .....	10
Importance of Public Hearings.....	11
Narrative Example.....	13
Conclusions and Further Areas of Study .....	14
Appendix A.....	16
Links for Public Record Sources.....	18

## **ABBREVIATIONS**

BOS – Board of Supervisors  
CPCN – Certificate of Public Convenience and Necessity  
CUP – Conditional Use Permit  
DCR – Department of Conservation and Recreation  
DEQ – Department of Environmental Quality  
DHR – Department of Historical Resources  
DWR – Department of Wildlife Resources  
ISA – Interconnection Service Agreement  
NOI – Notice of Intent  
PBR – Permit by Rule  
PC – Planning Commission  
RAP – Regulatory Advisory Panel  
SCC – State Corporation Commission  
SMP – Stormwater Management Permit  
SUP – Special Use Permit  
VCEA – Virginia Clean Economy Act  
VSMP – Virginia Stormwater Management Program

## SUMMARY

This report offers case study observations that could be informative in efforts to create a more predictable, efficient, and expedient permitting process for utility-scale solar facility construction in Virginia. From examining the 12 case studies, this report finds two major impediments to solar permitting. It finds that, for projects seeking a permit-by-rule (PBR), there is a long gap in the overall permitting process between obtaining local and state permits: this step usually takes over a year. This gap appears to be caused by a lack of common standards for state and local permitting processes, which complicates the application process for developers. This study also finds that, in the local permitting process, there is very little time for the public, developers, and local governments to come together and discuss project proposals. Public discussion of proposed projects often occurs only during public hearings. Moreover, directly after the public hearing local governments decide to approve or disapprove of proposals. Reforms to these two areas of the permitting process might benefit all stakeholders in solar development.

## SCOPE

This study examined permitting timelines for 12 utility-scale solar projects, 3 of which exceeded the PBR capacity of 150 MW.

Developer (County)	Capacity (MW)	PJM Status
Hecate (Pulaski County)	280	None (reapplying for local permit)
Maroon <sup>1</sup> (Culpeper)	149	None (denied local permit)
sPower (Spotsylvania)	500	Partially in service (485 MW)

The 9 small utility-scale projects examined were the largest projects that had completed the state permitting process when research for this paper concluded (10/1/21), and many of them have been completed or are on track for construction.

Developer (County)	Capacity (MW)	PJM Status
Moody Creek (Charlotte)	150	Active
Spring Grove (Surry)	150	Active
Carvers Creek (Gloucester)	150	Suspended
Fort Powhatan (Prince George)	150	Partially in service
Maplewood (Pittsylvania)	120	Under construction
Greenwood (Culpeper)	100	Suspended
Southampton (Southampton)	100	In service
Belcher Solar (Louisa)	88	Engineering and procurement
Foxhound Solar (Halifax)	83	Active

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<sup>1</sup> Maroon's parent company is Strata Solar, so the project is often referred to by those in the renewable energy industry as a Strata project. The public documents, however, refer to the developer as Maroon, so this report uses that name.

## METHODOLOGY AND SOURCES

This study's analysis is mostly qualitative. The study created detailed permitting timelines for the local, state, and interconnection processes<sup>2</sup> to examine which factors had the greatest impacts on the speed and efficiency of a project's approval for local and state permits. There is some quantitative analysis, namely the calculation of time between various steps of the permitting processes. In addition, two polls on public opinions of solar in Virginia were consulted to provide quantitative context for the information gleaned from the county records of local governments.

The sources used for this study came primarily from the minutes and agendas of county government meetings (planning commissions, zoning boards, and boards of supervisors). These are available to the public online. Information for the PJM, PBR, and CPCN permitting timelines came from sources available to the public: the PJM interconnection queue site,<sup>3</sup> the DEQ renewable energy project status site,<sup>4</sup> and the SCC docket search site.<sup>5</sup> Two polls – conducted by the Conservatives for Clean Energy<sup>6</sup> and Zencity<sup>7</sup> – provided information on public opinion of solar panel development in Virginia. In addition, local newspapers provided context and further details about public hearings.

## BACKGROUND

Several bills regarding clean energy were passed in the 2020 Virginia legislative session.<sup>8</sup> The legislation directed at localities gives them an expanded set of tools to use when negotiating with developers. Broadly speaking, the legislation allows localities greater autonomy in shaping their own permitting processes.<sup>9</sup> In addition, localities are equipped with the tools to realize financial benefits from solar development. This legislation has been effective in helping local governments as well as developers convey the financial benefits of solar development to the public, a trend that is evident in the public hearing documents, during which opponents rarely voice financial concerns and proponents cite material benefits as reasons to permit projects.

The 2020 legislation did not directly address the lack of standardized permitting processes across state and local jurisdictions. There is only one section about accepting national standards

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<sup>2</sup> See Appendix for an overview of these processes.

<sup>3</sup> <https://www.pjm.com/planning/services-requests/interconnection-queues>.

<sup>4</sup> <https://www.deq.virginia.gov/permits-regulations/permits/renewable-energy/renewable-energy-project-status>.

<sup>5</sup> <https://scc.virginia.gov/docketsearch#DocketSearch/search>.

<sup>6</sup> <https://www.cleanenergyconservatives.com/wp-content/uploads/2021/08/VA-Clean-Energy-Survey-8.1-1.pdf>.

<sup>7</sup> <https://www.co.augusta.va.us/home/showpublisheddocument/16618/637583361059300000>.

<sup>8</sup> For a summary: <https://www.jdsupra.com/legalnews/summary-of-the-virginia-clean-economy-16631/>.

<sup>9</sup> The legislation clarifies and revises certain aspects of the process, such as siting agreements, revenue sharing, M&T stepdown, special exemptions for solar property taxes, and exempting solar facilities from obtaining certification of substantial accord with local comprehensive plans.

for solar panel use and battery technologies. The lack of standards and guidelines has been a concern of stakeholders. According to the Virginia Solar and Wind Energy Stakeholder Feedback Summary from 2018, conducted by Dominion and the Meridian Institute, respondents from various groups (government agencies, developers, advocacy groups, etc.) expressed desire for best practice guidelines for siting renewable energy projects.<sup>10</sup> They also noted that developers did not have the guidance or knowledge required to consider potential impacts on existing historical, cultural, or natural resources. The report, therefore, suggests that stakeholders lack common standards for mutual reference.

Since the 2018 stakeholder report there have been some efforts to merge guidelines and standards for planning and permitting, but these efforts have not yet aligned the local and state permitting processes. As part of the 2020 legislative session, localities were authorized to include in their zoning ordinances provisions to gradually accept national construction and operation standards for solar panels and batteries. Similarly, in the case of a developer constructing in or near a wetlands area, a local BOS may waive the Virginia Wetlands Protection permit if the project qualifies for a permit issued by the U.S. Army Corps of Engineers and receives a permit from the Virginia Marine Resources Commission or wetlands boards.<sup>11</sup> The SCC has made some moves to merge guidelines from different authorities. Effective on 10/1/21, the SCC must consider sufficient for its own review a permit regarding environmental impacts of solar installations issued by a local, state, or federal authority.<sup>12</sup> The DEQ has not done the same for the PBR process. Both the SCC and the DEQ have implemented policies that allow developers to work with the state before applying for state permits. Any developer seeking a CPCN from the SCC may request a pre-application review process.<sup>13</sup> The DEQ offers a similar review program to smaller utility-scale projects (5-150MW) seeking a PBR.<sup>14</sup> Neither of these review programs applies to local permitting: they do not offer a set of guidelines or standards that localities can use to evaluate solar project proposals. No efforts to coordinate with localities on standards and guidelines appear in the 2019 or 2020 Virginia Solar Energy Development and Energy Storage Authority reports or the agendas for the PBR Regulatory Advisory Panel (RAP)

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<sup>10</sup> See Appendix B of the 2018 Virginia Solar Energy Development and Energy Storage Authority Report: <https://www.governor.virginia.gov/media/governorvirginiagov/secretary-of-commerce-and-trade/2018-Virginia-Energy-Plan.pdf>.

<sup>11</sup> 9VAC25-210-220.

<sup>12</sup> Virginia Code 56-46.1.H.

<sup>13</sup> The process is to be carried out by the SCC in conjunction with the Department of Environmental Quality (DEQ), the Marine Resources Commission (MRC), the Department of Wildlife Resources (DWR), the Department of Historic Resources (DHR), the Department of Conservation and Recreation (DCR) and other appropriate agencies of the Commonwealth. A plan for the project construction will be made based on that joint consultation, which will be made available to the public online

<sup>14</sup>[https://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\440\GDoc\\_DEQ\\_5001\\_v1.pdf](https://townhall.virginia.gov/L/GetFile.cfm?File=C:\TownHall\docroot\GuidanceDocs\440\GDoc_DEQ_5001_v1.pdf). The agency allows pre-application review and consultation, which can be conducted with relevant agencies as well. This program came into effect on 7/18/12. To apply, a project must have an output greater than 5MW and have a disturbance zone greater than 10 acres.



meetings.<sup>15</sup> The lack of common standards and guidelines, particularly in the PBR process, may be contributing to the delays discussed below.

## DELAYS IN THE STATE PERMITTING PROCESS

The permitting process for a project depends on what type of permit it obtains. Projects require either a CPCN from the SCC (if they are over 150 MW)<sup>16</sup> or, as an alternative, they can seek a PBR from the DEQ (projects greater than 5 MW and less than or equal to 150 MW).<sup>17</sup> Three of the projects in this study were large enough to require a CPCN rather than a PBR, one of which (sPower in Spotsylvania) obtained the CPCN before applying for a local permit (see Figure 2 for their respective timelines). From the SCC docket search site and the public hearing documents, it appears that neither Maroon nor Hecate applied for a CPCN. A developer can apply for CPCN whenever it likes, but a developer seeking a PBR must gain a local permit before applying.<sup>18</sup> For reference, the general permitting process for the PBR projects is outlined in Figure 1. These projects must:

1. undergo review by their local PC, then secure approval from local government, then
2. prepare their state applications, then
3. have those applications reviewed.

Overall, developers seeking a PBR have a less flexible process than those seeking a CPCN.

A consistent feature of all the PBR project timelines is that the period between obtaining local permission and applying for the PBR is the longest stage by a significant amount. On average, it took 11 months for projects just to move from local approval to filing a PBR application, a little over half of their entire permitting processes (18 months). As figures 3 and 4 show, this period was the longest both in relative and absolute terms. In contrast, sPower, which received its state permit first, took only 8 months to obtain its CPCN, and just under 5 months to obtain a local permit.

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<sup>15</sup> 2019 report:

<https://static1.squarespace.com/static/5c4a1956c3c16a56550cfcda/t/5e287f0ad2e9fa1df8f7fb9a/1579712277701/VSED%26ESA+2019+Annual+Report.pdf>.

2020 report:

<https://static1.squarespace.com/static/5c4a1956c3c16a56550cfcda/t/602c3a7b92c6a05a3eb4ef4d/1613511322144/Virginia+Solar+Energy+Development+and+Energy+Storage+Authority+2020+Annual+Report+-+FINAL.pdf>.

<sup>16</sup> VAC 302.

<sup>17</sup> Virginia Code 10.1-1197.6.

<sup>18</sup> According to the Virginia Administrative Code (9VAC15-60-30 A), to submit a complete PBR application developers must include, "a certification by the governing body of the locality or localities wherein the small renewable energy project will be located that the project complies with all applicable land use ordinances."

Moreover, the sPower project is the largest by far (500 MW) and faced significant public opposition, so its short timeline is all the more significant.<sup>19</sup> The comparison suggests that having to obtain local permission before applying for a state permit causes a delay in the process.

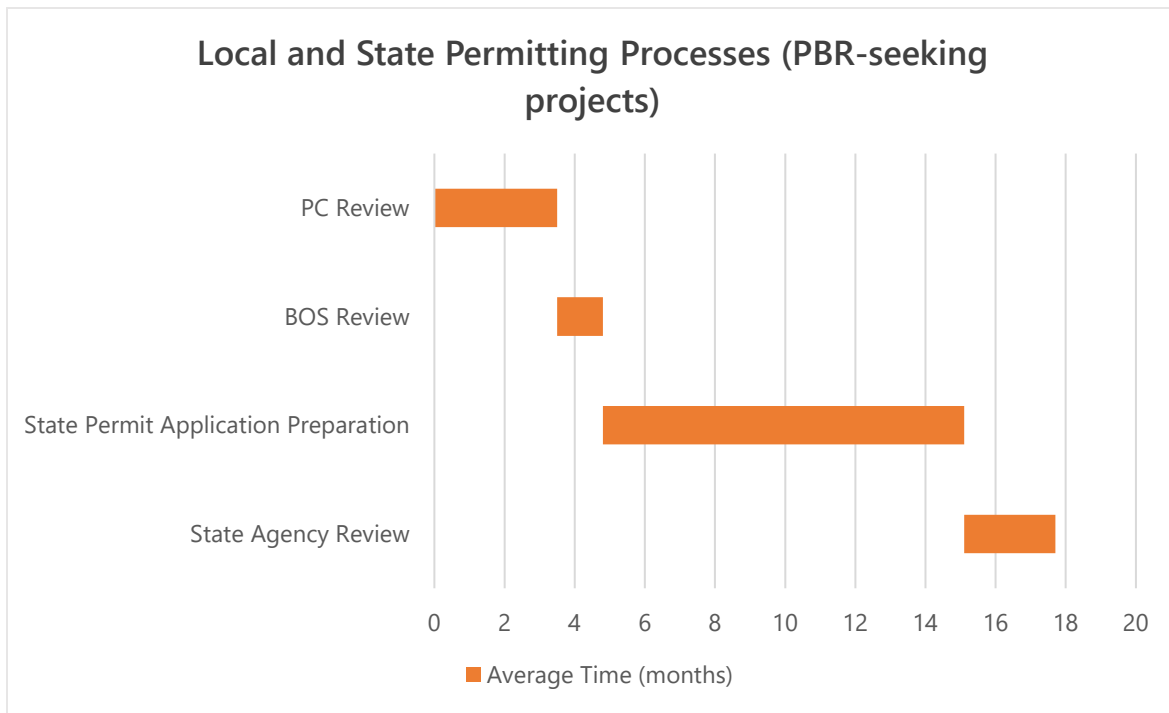


Figure 1

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<sup>19</sup> One of the employees of the AES Corporation consulted for this report stated that he prefers to seek the CPCN permit rather than the PBR because it is often a better strategy for developers to obtain a state permit before a local one. This is because the state has clearer guidelines and more requirements, which makes the permitting process more predictable and comprehensive than it is on the local level. With many aspects of a project reviewed and approved by the state, a developer can then present an extensive plan to the locality that will likely already meet many of the local requirements.

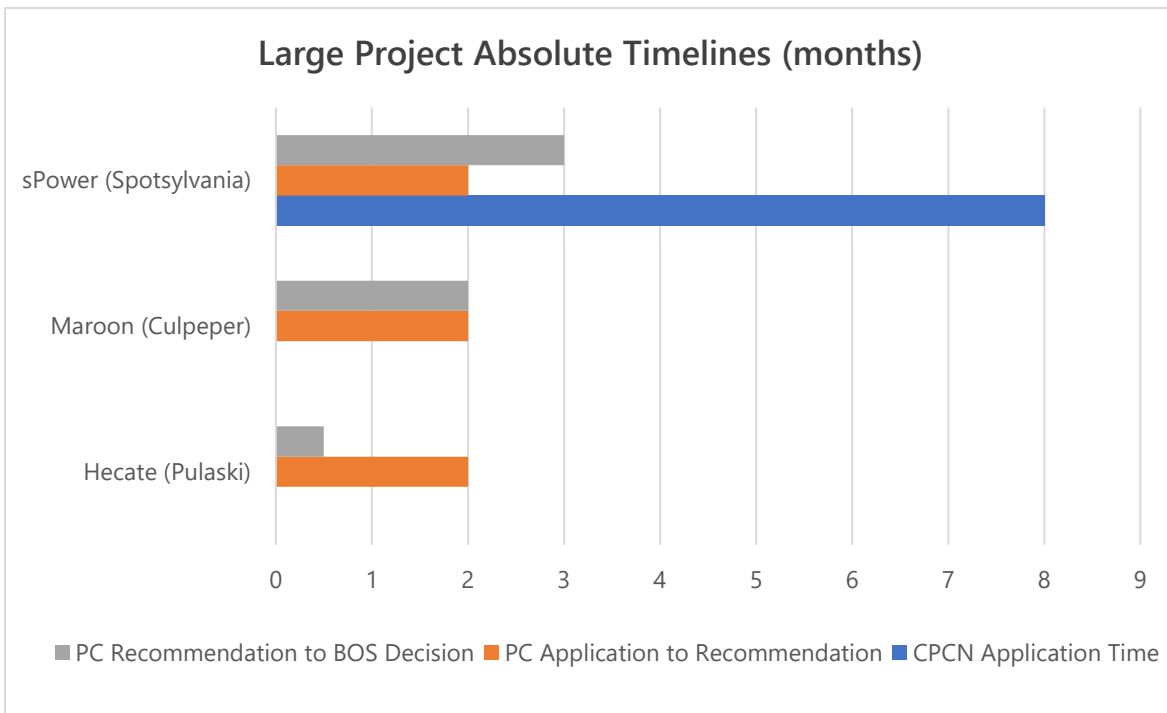


Figure 1

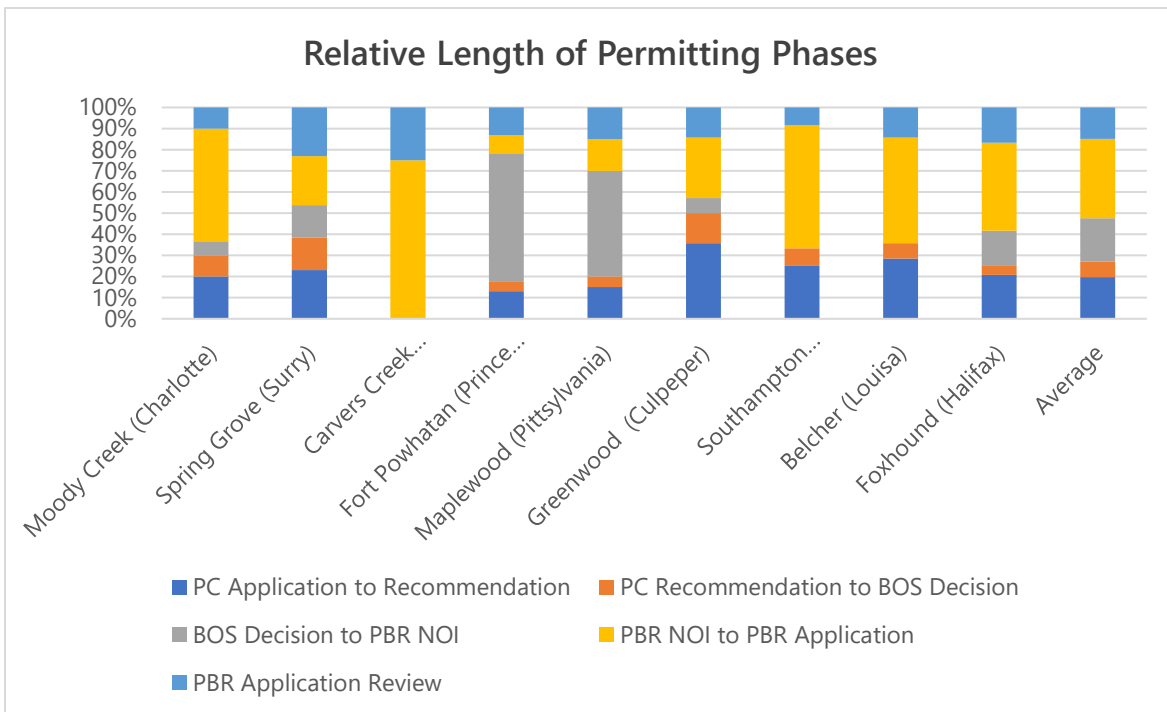


Figure 2<sup>20</sup>

<sup>20</sup> Carver's Creek (Gloucester) did not have to apply for a local permit because the Gloucester zoning ordinance did not require it at the time.

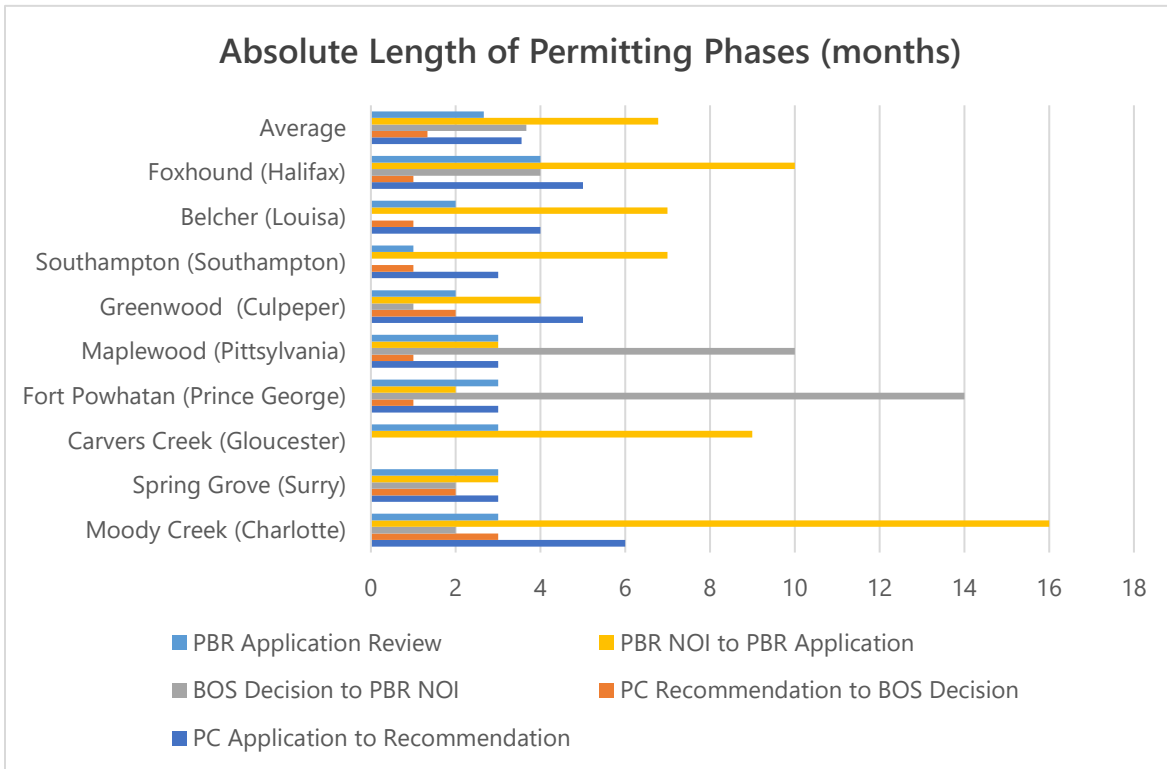


Figure 3

The apparent difficulty of preparing a project proposal for state approval is underscored by the experience of Greenwood Solar in Culpeper County. In the process of gaining its local CUP, Greenwood requested that the ordinance for CUPs be changed to accommodate the length of time needed to prepare for the state application. According to the ordinance, developers were given one year to begin construction after receiving a CUP, otherwise the permit would be revoked. Greenwood requested that the ordinance be changed to three years so that it could have time to prepare its application without having to reapply for the CUP. The relatively short timeline for sPower and the delays that other projects saw in the period between local and state permitting suggests that the permitting process could be streamlined by having developers apply for state permits earlier in the process.

One factor that complicates the timelines is that another process runs parallel with the state and local permitting processes. A developer must obtain an interconnection service agreement (ISA), provisional agreement, or complete one of the required studies (feasibility, impact, and facilities) with PJM in order to apply for a state permit, either a PBR or CPCN. As shown by Figure 5, it can take over 3 years for a project to go from entering the PJM queue to applying for a PBR. Obtaining the agreement or completed study from PJM, however, does not appear to be a driving factor in the length of time between obtaining a local permit and applying for the PBR. Of the nine largest solar installations that obtained PBR's, four obtained an ISA, provisional ISA, or completed a study before obtaining a local permit, whereas four obtained an ISA, provisional ISA, or completed a study after a local permit. One of the nine – Carvers Creek (Gloucester) - was



a special case in which the developer did not need to obtain a CUP. It did, however, take the developer nine months to apply for the PBR after submitting a notice of intent (NOI): that length of time is consistent with the other PBR projects. The case of Carvers Creek, therefore, seems to affirm that it is not the PJM process that causes the delay. It may be the case that the PJM process has lengthened in recent years given the higher number of solar projects being developed, but the 9 cases were not be affected by that change (Figure 4).

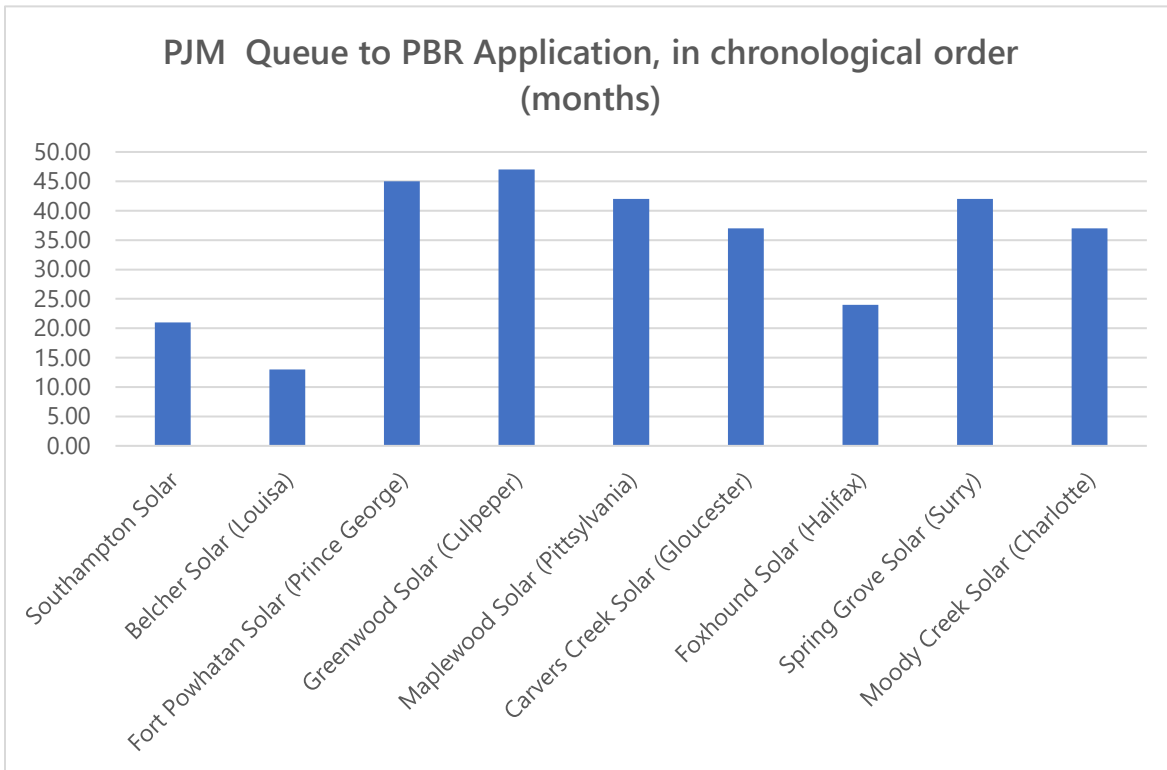


Figure 4

## EROSION AND STORMWATER MANAGEMENT

Local governments have tended to turn to guidelines and standards from state agencies when it comes to particularly important areas of solar development, such as erosion and stormwater management, which has become a major concern to localities because of at least two installations that faced major problems.<sup>21</sup> Of the 12 projects examined in this study, 5 of them faced significant public concern about stormwater and erosion management.<sup>22</sup> In 4 out of those 5 cases, local governments required the developers to craft erosion and stormwater plans with the DEQ. DEQ’s SMP program has become the standard for an adequate plan. This is evident in

<sup>21</sup> Coronal Energy (Essex): <https://www.wtvr.com/2018/02/08/green-solar-farm-is-turning-an-essex-county-watershed-brown/>; Belcher Solar (Louisa): <https://www.wtvr.com/news/problem-solvers/problem-solvers-investigations/virginia-farmers-and-dominion-energy>.

<sup>22</sup> Maroon (Culpeper), sPower (Spotsylvania), Maplewood (Pittsylvania), Greenwood (Culpeper), and Foxhound (Halifax).

the case of Maroon Solar (Culpeper), where the planning commission expressed particular concern about erosion and stormwater management. The commission originally suggested that the installation be built in 50-acre phases, which the developer contended was unworkable. To address the issue, Maroon stated that it would apply for and obtain an SMP.<sup>23</sup> Subsequently, the matter of negative erosion and stormwater effects was not raised in the BOS public hearing.<sup>24</sup> On the other hand, when sPower (Spotsylvania) worked out conditions with the local government, the latter added measures in addition to obtaining the SMP. Nonetheless, the SMP did serve as a standard upon which further conditions could be made. The common concern among localities regarding erosion and stormwater management and the role of the SMP as a standard for siting conditions suggests that in other areas of solar development local and state policies might be brought together.

## RURAL CONCERNS

Since solar panels are often constructed on land zoned as agricultural, it is often rural communities that determine whether or not projects receive permitting. The opinions of rural residents in Virginia, therefore, are particularly important for the success of solar panel projects.

According to two recent polls taken on solar power in Virginia, residents of rural areas do consider the financial benefits of solar development for their communities, but they also want assurance that the rustic character of the area will not be lost. One of the polls, conducted by Conservatives for Clean Energy (CCE) in July 2021, provides specific information about rural voters' attitudes toward renewable energy.<sup>25</sup> According to the poll, the strongest appeals of renewable energy for the rural population are combatting climate change and financial benefits. Resident of rural areas who support the VCEA (42%) do so primarily for jobs in clean energy (27%) and climate change (19%). When told that solar projects offer extra income to farmers, rural support is 51% to 21% oppose, with 29% unsure. When told about tax revenue, which goes toward schools and local needs like broadband, rural support is 52% to 19% opposition, with 29% unsure. Rural residents are also concerned about the agricultural character of their communities. When asked about new construction, in comparison to housing developments, industrial parks, or natural gas power plants, 56% of the rural population prefers solar farms. Assurance that solar farms will not change the landscape appeal to rural residents as well. When informed that solar farms pose no danger to people, livestock, agricultural crops or adjacent homes, they support solar 49% to 29% oppose, with 22% unsure. Maintaining the agricultural resources of their communities is important to rural populations, but they consider financial benefits of clean energy and combatting climate change to be higher higher priorities.

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<sup>23</sup> [https://go.boarddocs.com/va/ccva/Board.nsf/files/C28LRE566D71/\\$file/9.%203-8-2021%20APPLICANT%20REVISED%20U-2224-21-1%20Documents.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/C28LRE566D71/$file/9.%203-8-2021%20APPLICANT%20REVISED%20U-2224-21-1%20Documents.pdf).

<sup>24</sup>

[https://go.boarddocs.com/va/ccva/Board.nsf/files/C3FHNW495DB4/\\$file/05042021%20PM%20Minutes.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/C3FHNW495DB4/$file/05042021%20PM%20Minutes.pdf).

<sup>25</sup> <https://www.cleanenergyconservatives.com/wp-content/uploads/2021/08/VA-Clean-Energy-Survey-8.1-1.pdf>. The poll had 243 rural respondents.

Similar conclusions may be drawn from a survey of Augusta County residents' views on solar, conducted in April and May 2021.<sup>26</sup> Augusta County is largely rural, so the study provides a useful perspective. The report shows that, while respondents support renewable energy development by a slight majority, they hesitate primarily because they worry about having agricultural land used for industrial purposes. Moreover, they prefer that renewable energy projects be small and have no environmental impacts. Like the respondents in the CCE poll, the Augusta County respondents appreciate the financial benefits of renewable energy projects: out of potential positive outcomes, 56.2% believe that lower electricity rates is a reason for building solar installations, 46.2% additional tax revenue, 46.2% stable revenue for landowners, and 44.9% an increase in job opportunities. The Augusta County poll paints a similar picture as the CCE poll: residents of rural areas in Virginia support clean energy development and are particularly enticed by financial benefits to their communities, but they also wish to preserve the rural character of their communities.

Based on the information from the polls, it seems that residents of rural areas want a developer to make clear the financial incentives for solar construction while also assuring that the solar farm will have minimal environmental impact. It seems that local governments and developers are able to convey financial incentives clearly and effectively both before and during public hearings, as far as the public hearing minutes express. In contrast, when it comes to environmental impacts, neither developers nor local governments have been successful in communicating effectively that proper mitigation measures are in place. As seen during the permitting processes for the three larger solar projects, residents of rural areas fear that the agricultural character of their communities will be lost as it becomes converted into industrial use for solar panel facilities. This concern is heightened by a sense that control of the land is being taken away from the community. Public opposition in Pulaski and Spotsylvania spoke to the loss of agricultural land and the feeling of powerlessness as companies from out of state came to change their communities. Even when developers take great care to maintain local natural resources, the perceptions of losing control and changes to the environment can cause public opposition, denial of permits, and/or drawn-out discussions between developers and local governments about conditions.

## **IMPORTANCE OF PUBLIC HEARINGS**

A major reason why rural concerns may not be properly addressed is the public hearing process at the local level. Public hearings are major inflection points in the permitting process, and they are often the first time when the public is able to voice directly its concerns or support to other stakeholders or decision makers. Planning commissions and boards of supervisors usually vote on permit applications at the conclusion of the public hearings, in the same meetings, so they have a very limited time to process public opinion. This creates a somewhat volatile environment, where opinions can be influenced without proper time for consideration. For example, the amount of public opposition expressed during the hearing for Maroon Solar in

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<sup>26</sup> <https://www.co.augusta.va.us/home/showpublisheddocument/16618/637583361059300000>. The poll had 788 responses, more than 2/3 of which owned more than an acre of land.

Culpeper caused three supervisors to change their votes from support to opposition.<sup>27</sup> Similarly, one Pulaski board member who voted in opposition after the hearing for Hecate Energy stated that he did so in part because of the public comments.<sup>28</sup> The debate at public hearings can force boards and commissions to delay decision-making to reconsider projects, as happened multiple times in the case of sPower in Spotsylvania. The local permitting process, therefore, is not conducive to allowing boards and commissions adequate opportunity to consider public opinion at length before making decisions.

The short time that commissions and boards have to consider public opinion may be preventing them from actually addressing the concerns of the public. For example, residents frequently worry that solar panels may contain toxic chemicals that can get into water sources.<sup>29</sup> The county government of Culpeper addressed this concern by investigating the matter, and subsequently declared in its utility-scale solar policy that, "solar generation facilities, post-construction, do not pose any identified, noise, toxicity, or EMF/Radiation concerns."<sup>30</sup> Nevertheless, solar panel toxicity was a major concern of the board of supervisors (as well as the public) during the public hearing for Greenwood Solar, which applied for a permit just after the county adopted the policy. It appears that, in the heat of discussion and public pressure, the board failed to consult its own policies. The case serves as an example of how research conducted at public expense is not able to be used to guide decision-making because of the short turnaround between public hearings and local government decision-making.

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<sup>27</sup> Champion, A. B. (2021, May 5). Culpeper County Board Denies Maroon Solar Power Plant Project. *Culpeper Star-Exponent* (Culpeper, Virginia). Meeting notes from the county records states that 31 people spoke in opposition to the project and 5 spoke in favor of it. According to Champion's article, the primary concern of those in opposition to the project was that the installation would change the rural character of Culpeper. The board responded to this concern by unanimously voting to uphold the Planning Commission's recommendation to reject the project on the grounds that it would not maintain the area's rural character and would not preserve the area for agricultural use.

<sup>28</sup> From the January 25, 2021 meeting minutes for the Pulaski Board of Supervisors: "Mr. Bopp provided the following statement prior to announcing his vote (on file with the Clerk of the Board): I respect the opinion of my fellow board members and understand the need for progress in Pulaski County. But I'm opposed to the solar farm project and **have a responsibility to support those who have contacted me with the same concerns**. I believe there are other ways to promote the County without taking such drastic measures to change the landscape. If it isn't broke, don't fix it. I vote No on the solar farm proposal."

<sup>29</sup> Other common public concerns include negative effects on home values, damage to historical resources, and changes to the rural character of areas.

<sup>30</sup>[https://web.culpepercounty.gov/Portals/0/Departments/Planning\\_and\\_Zoning/Documents/2018%20Solar%20Policy%20\(Signed\).pdf?ver=2018-09-07-085643-317](https://web.culpepercounty.gov/Portals/0/Departments/Planning_and_Zoning/Documents/2018%20Solar%20Policy%20(Signed).pdf?ver=2018-09-07-085643-317).



There are ways for parties to engage with one another before public hearings. For example, the developer could host a community meeting before local government public hearings. Community meetings allow the public to ask questions and voice their concerns to developers, who can then adjust their construction and operation plans before public hearings.<sup>31</sup> In addition to community meetings, citizen advisory committees are another potential way for stakeholders to engage with one another. Such committees already exist in Virginia and serve to provide counsel on particular topics to boards and commissions. For example, Albemarle County has an Agricultural-Forestal Districts Advisory Committee that, “provides input on the nature of farming and forestry and agricultural and forestal resources within the districts and advises the Board of Supervisors on the potential impacts of proposed special use permits and rezonings within, or adjacent to, the districts.”<sup>32</sup> Similar committees could be appointed by local governments to provide guidance on solar projects.<sup>33</sup> Community engagement could provide useful information to developers, make public hearings more productive, and help build trust between developers and community members, therefore resulting in projects that have the buy in of the community prior to reaching public hearing.

## NARRATIVE EXAMPLE

Once case study in particular highlights many of the themes discussed in this report: that of Maroon Solar in Culpeper. Maroon applied to the Culpeper PC for a CUP in January 2021. The PC proposed numerous conditions for the project, particularly concerning stormwater and erosion control. The PC suggested that the project be developed in 50-acre parcels, that way each could be tested for potential negative stormwater and erosion effects. Maroon responded that the condition would delay the construction timeline to the point of being cost-prohibitive, making solar development impossible for any developer. The PC eventually recommended that the permit be denied because of potential disruptions to local traffic and noise during the construction phase, for which Maroon had mitigation plans. The PC also found that the panels were higher than allowed by the county ordinance and it expressed reservations about the size of the installation, despite the large visual setback of the project.

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<sup>31</sup> The Virginia Tech Renewable Energy Facilities Siting Project (VT-REFS) lists early, frequent, and meaningful public engagement as one of its four key principles in solar energy development. Foxhound (Halifax) held a community meeting before the PC and BOS public hearings and saw little public opposition at the hearings. At the PC hearing more residents spoke in favor than in opposition, and the public opinion was split evenly at the BOS hearing. In most cases, members of the public who attend the hearings overwhelmingly speak in opposition.

<sup>32</sup> <https://www.albemarle.org/government/community-development/advisory-boards/agricultural-forestal-districts-advisory-committee>.

<sup>33</sup> According to a request for information (RFI) on barriers to community solar issued by the U.S. Department of Energy Solar Energy Technologies Office (SETO) in May of 2021, stakeholders from various groups stressed that community engagement was crucial for project development:

<https://www.energy.gov/communitysolar/summary-solar-energy-technologies-office-equitable-community-solar-request>.

At the BOS public hearing, the community response to the project was overwhelmingly negative. Those who spoke in opposition consistently expressed that they saw the development as an imposition by an outside group, one that was taking away the rustic nature of their community and disregarding local history. As far as the public documents show, Maroon did not hold any community meetings before applying for the permits, although they had made extensive efforts to be good stewards of the land, even conducting a large study on the nearby battlefield.<sup>34</sup> Nevertheless, claims that the project would damage historical resources dominated the public hearing from the beginning.

The overwhelmingly negative public response during the hearing caused 3 board members to change their minds on approving the project, as discussed above. Yet, 3 board members voted to overrule the finding of the PC that the project was not in substantial accord with the Comprehensive Plan. The contrast between the two votes suggests that the supervisors acted in accordance with the public opinion at hearings, even though they disagreed with it. The example of Maroon Solar in Culpeper thus demonstrates many of the themes highlighted in this study, such as the need for both common guidelines between the state and localities and increased dialogue among stakeholders, prior to public hearing.

## **CONCLUSIONS AND FURTHER AREAS OF STUDY**

This paper finds that certain steps in the solar permitting process in Virginia might be causing unnecessary delays.

1. In the PBR process, it seems that the transition from receiving a local permit to applying for the PBR is the longest in the process. Possible reasons for this delay include a lack of shared standards among localities and the state (which stakeholders have been requesting) and the requirement of developers seeking a PBR to obtain local permitting before applying for the state permit. The trends in stormwater and erosion permitting suggest that localities may look to state standards when reviewing projects.
2. The primary concerns of the rural population, in whose communities solar developments are developed, are only partially addressed in the public review process. The top concern of those living in rural areas is financial compensation for solar development, and the state has enacted legislation that helps developers provide financial benefits. Yet the second major concern of the rural population, preservation of agricultural land and aesthetic, is not being adequately addressed. This is in part due to the nature of public hearings, which usually has PCs and BOSs vote on projects directly after hearing from the public with very little time to react or respond to its concerns. Opportunities for stakeholders to share their concerns and goals in earlier meetings (perhaps with informed input from citizen advisory committees about applicable policies), as well as delayed decision-making for PCs and BOSs, might allow for the concerns of the rural population to be heard and taken into consideration. Reforms to the local public hearing

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<sup>34</sup> Since Maroon did not apply for a state permit, it had not yet consulted with the DHR on the project.

and the state PBR permitting processes could streamline the solar permitting process in ways advantageous to all stakeholders.

Three areas for future inquiry should be particularly fruitful.

1. A more comprehensive study of permitting timelines would help refine possible proposals for adjusting the permitting process. Special attention should be paid to the particular circumstances of solar projects that failed to achieve local or state permitting. Additionally, information from developers about the causes of the delay in moving from local approval to the PBR application would highlight areas that could be streamlined.
2. It would be useful to refine, through additional polling, our understanding of public attitudes about large solar facilities.
3. It should be determined if and how often developers include permits from local, state, or federal authorities when applying for a CPCN from the SCC, as allowed by VC 56-46.1H. Tracking the ordinance's use would help determine whether or not shared standards between local and state authorities would be possible.

# APPENDIX A

## GUIDE TO THE SOLAR PERMITTING PROCESS IN VIRGINIA

Solar projects go through at least three major permitting processes before they can seek construction permits. They are briefly outlined here to provide context.

### PJM Queue<sup>35</sup>

PJM is the regional transmission organization that manages the daily operation of Virginia's electricity grid. For larger solar projects to "plug in" to the grid, they must receive approval from the PJM, which is a lengthy process. The first step is getting into the New Services Queue, or interconnection queue. Once a project has entered the queue, it is on track to be reviewed by PJM. The first review is the feasibility study. Once this first study is complete and a project has received local permitting, a developer can apply for a PBR (discussed below). The second review is the impact study. This determines whether or not the existing grid capacity is sufficient to accommodate the generation from the proposed solar installation. The third review is the facilities study. This determines whether or not the proposed design of the project is adequate to connect to the grid and transfer power. After the reviews are complete, PJM develops two agreements with the developer: an interconnection service agreement (ISA) and a construction service agreement (CSA). Only then can a project commence construction.

### Local Permitting

The most sought-after places to construct solar panels are often zoned agricultural, and developers usually have to obtain zoning permissions to construct solar farms in these areas. They can do so by obtaining a conditional or special use permit or have the zoning laws amended. In any case, this process is usually reviewed by two groups, the Planning Commission and then the Board of Supervisors. The PC is an unelected advisory board chosen by the BOS. They review applications for CUP/SUP/special exceptions and zoning amendments and pass on a recommendation to the BOS regarding whether to approve or deny the application. They determine if the request is in accord with the county's comprehensive plan, which is a guideline for how the county makes decisions. Before a developer applies to the PC, it usually works with county staff on a plan for the project's installation, and the staff may draft a set of conditions to recommend to the planning commission. The planning commission may refine the conditions based on input from the public, obtained from a public hearing, which is usually required before it can make a recommendation. This allows members of the public to hear from the developer and planning commission about the project and to voice their opinions and concerns. Usually the PC votes on its recommendation directly after the public hearing. Occasionally, though, it will delay the vote to a later meeting.

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<sup>35</sup> <https://www.pjm.com/-/media/committees-groups/task-forces/iprtf/postings/interconnection-process-overview.ashx>.



Once the PC has made a recommendation, the proposal can be heard by the BOS. Often it too must hold a public hearing on the proposal. These hearings usually draw a larger audience than PC public hearings. The BOS may also work with the developer on refining the project plan. Usually the BOS votes to approve or deny the request directly after the public hearing, but it may delay its decision to a later meeting. In some cases, the BOS may request changes so significant that the project gets remanded back to the PC to re-review after changes have been made.

In some cases, a zoning board or board of zoning appeals is involved. For example, in Pittsylvania County, a project does not go to the BOS after the PC makes its recommendation, but to a Board of Zoning Appeals. This group also tends to hold a public hearing on the project before deciding whether to grant the permit. Also, not all localities in Virginia have zoning, so the process can look slightly different based on locality and project.

## State Permitting

In addition to obtaining a local SUP or CUP, a utility-scale solar project over 5MW must get approval from the state.<sup>36</sup> There are two different agencies that approve utility solar projects: the SCC and the DEQ. A developer can seek SCC grant of a CPCN at any stage in the process, though the SCC may request that, before it makes its decision, the developer obtain from the PJM a study or temporary service agreement.<sup>37</sup> DEQ offers an alternative permitting process, the PBR, for projects with a proposed capacity of less than 150 MW.<sup>38</sup> To begin the PBR permitting process, a project must first have local approval as well as a temporary interconnection agreement or completed study from PJM. A project must also file an NOI before applying. Once an application is filed, the DEQ has 90 days to respond. To determine whether or not a project receives a PBR, the DEQ consults with the DHR, DWR, and DCR.

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<sup>36</sup> <https://law.lis.virginia.gov/admincode/title9/agency15/chapter60/section130/>

<sup>37</sup> <https://openei.org/wiki/RAPID/Roadmap/8-VA-c>.

<sup>38</sup> <https://law.lis.virginia.gov/admincode/title9/agency15/chapter60/>.

## LINKS FOR PUBLIC RECORD SOURCES

### Moody Creek (Charlotte)

- Charlotte County BOS Meeting on 8/14/19 packet ([https://www.charlotteva.com/pdfs/packets/2019\\_08Packet.pdf](https://www.charlotteva.com/pdfs/packets/2019_08Packet.pdf))
- PJM Queue/Oasis ID: AD2-063

### Spring Grove (Surry)

- PC Public Hearing Agenda 5/18/20 [https://www.surrycountyva.gov/AgendaCenter/ViewFile/Agenda/\\_05182020-208?html=true](https://www.surrycountyva.gov/AgendaCenter/ViewFile/Agenda/_05182020-208?html=true)
- BOS Public Hearing Minutes 7/2/20 [https://www.surrycountyva.gov/AgendaCenter/ViewFile/Minutes/\\_07022020-215](https://www.surrycountyva.gov/AgendaCenter/ViewFile/Minutes/_07022020-215)
- BOS Public Hearing Agenda Packed 7/2/20 [https://www.surrycountyva.gov/AgendaCenter/ViewFile/Agenda/\\_07022020-215?packet=true](https://www.surrycountyva.gov/AgendaCenter/ViewFile/Agenda/_07022020-215?packet=true)
- PJM Queue/Oasis ID: AD1-025

### Fort Powhatan (Prince George)

- PC Public Hearing Minutes (4/26/18) <https://cms1files.revize.com/princegeorgeva/PC%20Meeting%20Minutes%204-26-18.pdf>
- PC Public Hearing Agenda Packet (4/26/18) <https://cms1files.revize.com/princegeorgeva/PC%20Meeting%20Minutes%204-26-18.pdf>
- PC Meeting Minutes (5/24/18) <https://cms1files.revize.com/princegeorgeva/PC%20Meeting%20Minutes%205-24-18.pdf>
- BOS Public Hearing Minutes (6/12/18) <https://cms1files.revize.com/princegeorgeva/20180612rm.pdf>
- BOS Public Hearing Packet (6/12/18) <https://cms1files.revize.com/princegeorgeva/20180607140827.pdf>
- PJM Queue/Oasis ID: AB2-190

### Maplewood (Pittsylvania)

- PC Public Hearing Minutes (2/5/19) [https://www.pittsylvaniacountyva.gov/AgendaCenter/ViewFile/Minutes/\\_02052019-904](https://www.pittsylvaniacountyva.gov/AgendaCenter/ViewFile/Minutes/_02052019-904)
- Board of Zoning Appeals Regular Meeting Minutes (2/12/19, included in agenda packet for 3/14/19) [https://www.pittsylvaniacountyva.gov/AgendaCenter/ViewFile/Agenda/\\_03142019-915](https://www.pittsylvaniacountyva.gov/AgendaCenter/ViewFile/Agenda/_03142019-915)
- PJM Queue/Oasis ID: AC1-083

### Greenwood (Culpeper)

- Memo to PC (7/27/18) [https://go.boarddocs.com/va/ccva/Board.nsf/files/B36RLQ666727/\\$file/1.%207-27-18%20MEMO%20to%20PC%20Regarding%20Case%20No.%20U-2207-18-1.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/B36RLQ666727/$file/1.%207-27-18%20MEMO%20to%20PC%20Regarding%20Case%20No.%20U-2207-18-1.pdf)
- PC Meeting Minutes (8/8/18)

[https://go.boarddocs.com/va/ccva/Board.nsf/files/B3UH5646C424/\\$file/8.8.18%20PC%20Minutes.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/B3UH5646C424/$file/8.8.18%20PC%20Minutes.pdf)

- BOS Public Hearing Minutes (10/2/18)  
[https://go.boarddocs.com/va/ccva/Board.nsf/files/B65N475431E7/\\$file/10022018%20PM%20Minutes.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/B65N475431E7/$file/10022018%20PM%20Minutes.pdf)
- PJM Queue/Oasis ID: AC1-043

#### Southampton (Southampton)

- PJM Queue/Oasis ID: AA2-088
- PC Public Hearing Agenda (8/11/16)  
[https://www.southamptoncounty.org/departments/planning/august\\_2016.php](https://www.southamptoncounty.org/departments/planning/august_2016.php)
- PC Public Hearing Minutes (8/11/16)  
[https://cms7files1.revize.com/southamptonva/Planning%20Commission%20Agendas/2016/september/Planning%20Commission%20Minutes\\_8-11-16.pdf](https://cms7files1.revize.com/southamptonva/Planning%20Commission%20Agendas/2016/september/Planning%20Commission%20Minutes_8-11-16.pdf)
- PC Meeting Agenda (9/8/16)  
[https://www.southamptoncounty.org/departments/planning/september\\_2016.php](https://www.southamptoncounty.org/departments/planning/september_2016.php)
- BOS Meeting Agenda (9/26/16)  
[https://www.southamptoncounty.org/government/board\\_of\\_supervisors/september\\_2016.php](https://www.southamptoncounty.org/government/board_of_supervisors/september_2016.php)
- BOS Meeting Minutes (9/26/16)  
[https://cms7files1.revize.com/southamptonva/document\\_center/BOS/2016/BOS%20Minutes\\_9-26-16.pdf](https://cms7files1.revize.com/southamptonva/document_center/BOS/2016/BOS%20Minutes_9-26-16.pdf)

#### Belcher (Louisa)

- BOS Public Hearing Agenda Packet (3/6/17)  
<http://louisacountyva.iqm2.com/Citizens/FileOpen.aspx?Type=1&ID=1297&Inline=True>
- PJM Queue/Oasis ID: AB2-158 (superseded by AE1-154)

#### Foxhound Solar (Halifax)

- 2018 Meeting Materials  
[https://www.halifaxcountyva.gov/index.asp?Type=B\\_BASIC&SEC={02A01E8B-E27D-489E-8313-C9CE97E573CA}&DE={0BDEA89F-A85E-4AC4-AB5F-F10E8E6059FD}&Design=PrintView](https://www.halifaxcountyva.gov/index.asp?Type=B_BASIC&SEC={02A01E8B-E27D-489E-8313-C9CE97E573CA}&DE={0BDEA89F-A85E-4AC4-AB5F-F10E8E6059FD}&Design=PrintView)
- PJM Queue/Oasis ID: AD1-087 and AD2-202

#### Hecate (Pulaski)

- Staff Report (1/12/21)  
[https://go.boarddocs.com/va/copva/Board.nsf/files/BXGU5E7A5E08/\\$file/Staff%20Report%20Hecate%20Energy%20Pulaski%20LLC%20updated%201.21.21.pdf](https://go.boarddocs.com/va/copva/Board.nsf/files/BXGU5E7A5E08/$file/Staff%20Report%20Hecate%20Energy%20Pulaski%20LLC%20updated%201.21.21.pdf)
- BOS Public Hearing Minutes (1/25/21)  
<http://go.boarddocs.com/va/copva/Board.nsf/goto?open&id=BYAJGH4CE24A>

#### Maroon (Culpeper)

- PC Case Analysis Review (2/22/21)  
[https://go.boarddocs.com/va/ccva/Board.nsf/files/C28LRJ566D86/\\$file/2.%202-22-21%20U-2224-21-1%20Maroon%20Solar%20Case%20Analysis.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/C28LRJ566D86/$file/2.%202-22-21%20U-2224-21-1%20Maroon%20Solar%20Case%20Analysis.pdf)
- Maroon Solar Response to PC Case Analysis Review (3/5/21)  
[https://go.boarddocs.com/va/ccva/Board.nsf/files/C28LRE566D71/\\$file/9.%203-8-2021%20APPLICANT%20REVISED%20U-2224-21-1%20Documents.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/C28LRE566D71/$file/9.%203-8-2021%20APPLICANT%20REVISED%20U-2224-21-1%20Documents.pdf)
- Culpeper BOS Regular Meeting Minutes (5/4/21)  
[https://go.boarddocs.com/va/ccva/Board.nsf/files/C3FHNW495DB4/\\$file/05042021%20PM%20Minutes.pdf](https://go.boarddocs.com/va/ccva/Board.nsf/files/C3FHNW495DB4/$file/05042021%20PM%20Minutes.pdf)

#### sPower (Spotsylvania)

- sPower application to SCC for CPCN (8/8/18)  
<https://scc.virginia.gov/docketsearch/DOCS/3n2s01!.PDF>
- sPower documents on SCC site (case number PUR-2017-00162)  
<https://scc.virginia.gov/docketsearch#caseDocs/138004>
- PC Public Hearing (11/7/18)  
[https://www.spotsylvania.va.us/DocumentCenter/View/4932/pcmin2018\\_1107](https://www.spotsylvania.va.us/DocumentCenter/View/4932/pcmin2018_1107)
- PC Public Hearing (12/5/18)  
[https://www.spotsylvania.va.us/DocumentCenter/View/4931/pcmin2018\\_1205](https://www.spotsylvania.va.us/DocumentCenter/View/4931/pcmin2018_1205)
- PC Public Hearing (12/19/18)  
[https://www.spotsylvania.va.us/DocumentCenter/View/4930/pcmin2018\\_1219](https://www.spotsylvania.va.us/DocumentCenter/View/4930/pcmin2018_1219)
- PC Meeting Minutes (1/1/16)  
[https://www.spotsylvania.va.us/DocumentCenter/View/4928/pcmin2019\\_0116](https://www.spotsylvania.va.us/DocumentCenter/View/4928/pcmin2019_0116)
- BOS Public Hearing Minutes (2/26/19)  
<https://www.spotsylvania.va.us/DocumentCenter/View/4787/Minutes-02-26-2019>
- BOS Meeting: 3/12/19  
<https://www.spotsylvania.va.us/DocumentCenter/View/4788/Minutes-03-12-2019>
- BOS Meeting: 3/19/19  
<https://www.spotsylvania.va.us/DocumentCenter/View/4789/Minutes-03-19-2019>
- BOS Meeting 4/9/19  
<https://www.spotsylvania.va.us/DocumentCenter/View/4791/Minutes-04-09-2019>
- BOS Public Hearing: 4/11/19  
<https://www.spotsylvania.va.us/DocumentCenter/View/4792/Minutes-04-11-2019>
- PJM Queue/Oasis ID: AC1-158