

DEPLOYING LARGE-SCALE SOLAR

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WHY IT MATTERS

Utility-scale solar facilities are crucial to Virginia's transition to a clean energy future. Utility-scale solar is the cheapest form of new generation available, and its environmental impacts pale in comparison to the fossil fuels we are transitioning away from.¹

To achieve a carbon-free electric grid that is consistent with U.S. climate goals, wind and solar must comprise 60-80% of the nation's electricity mix by 2035, while approximately tripling generation capacity as demand grows.² While distributed energy resources play an important role in decarbonization, demand management, and grid resiliency, we will not be able to meet our energy needs with these sources alone (see page 113).³ Utility-scale solar projects will play a critical role in Virginia and across the globe.

At the same time, the construction and build-out of utility-scale solar necessary to meet our goals will result in one of the largest land use changes in Virginia history, with most projects constructed in rural communities.⁴ Therefore, the Commonwealth must have protections in place to avoid impacting Virginia's important natural resources and to minimize and mitigate such impacts where they cannot be avoided.

On average, utility-scale solar requires five to ten acres per megawatt of electricity produced.⁵ As of March 2023, the Virginia Department of Environmental Quality (DEQ) had permits and applications for over 8 gigawatts worth of solar, expected to cover nearly 86,000 acres in Virginia.⁶ Many of these facilities are being sited in rural localities with little experience permitting large construction projects, and a majority of these localities do not have established solar ordinances.⁷

CURRENT LANDSCAPE

As a start, the Virginia Clean Economy Act (VCEA) requires Dominion Energy to propose 16,100 MW of onshore wind and solar by the end of 2035, and Appalachian Power Co. must propose 600 MW of onshore wind and solar by the end of 2030.⁸

DEQ will soon propose regulations that will require mitigation for impacts to prime agricultural soils and contiguous forest lands for solar projects that seek approval through the permit by rule (PBR) process.⁹ The final regulations will aim to create an environment that continues to support a growing solar industry while minimizing impacts to prime agricultural soils and our most ecologically valuable forests by incentivizing developers to use less

disturbing construction practices, incorporate different types of agrivoltaics, and offsite conservation easements. Increasingly cost-effective technologies, such as all-terrain trackers, can help developers minimize grading disturbance and its associated adverse impacts such as stormwater runoff and delays in vegetation growth.¹⁰ DEQ also finalized a new stormwater handbook that took effect July 1, 2024 with sections specific to utility-scale solar, including treating solar panels as impervious surfaces to calculate stormwater management facilities.¹¹

At the state level, Virginia has created an attractive environment for utility-scale solar through potential tax exemptions and revenue sharing.¹² At the local level, counties have already approved a significant amount of solar, roughly 12,000 MW.¹³ However, roughly two-thirds of these projects have yet to commence construction. There is no guarantee that they will be used for our utilities' compliance with the VCEA and some may fail to come to fruition due to financing or interconnection issues. Despite this early approval of projects, an increasing number of Virginia localities have recently enacted restrictive ordinances that severely limit, and in some cases, ban the development of utility-scale solar.

Unfortunately, some early pioneer projects employed inadequate construction practices that raised local concerns. In some Virginia counties, local resistance has been fueled by misinformation.¹⁴ If the trend toward restrictions and bans continues, the Commonwealth's ability to meet the mandates of the VCEA might be endangered.

OPPORTUNITIES

Many of the localities that are seeing an increasing number of solar projects do not have the resources necessary to appropriately review these projects. State-supported technical assistance could provide localities with the tools or employees they need to regulate solar land use within their jurisdictions, or even at a more regional level.

Agrivoltaics, or solar facilities where agricultural activities are also taking place, are an area ripe for enormous growth. As many utility-scale projects will continue to be sited on agricultural lands, encouraging and incentivizing beneficial dual-use of these lands can reduce the impact of these projects on soils while also helping to generate greater support for these projects. When developed effectively, these projects not only help maintain better quality land, they also decrease carbon emissions and costs from site landscaping requirements. An increase in proj-

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ects growing crops under panels will help minimize the degradation of prime agricultural soils, conserve water,¹⁶ and provide dual economic benefit to the owner, all while dispelling the perception that agriculture and clean energy cannot co-exist.

Community Benefit Agreements (CBAs) are legally enforceable contracts between the developer of a project and the community, or a coalition of community-based organizations. CBAs stipulate the benefits that a project developer agrees to fund or implement, in exchange for community support of the project. Benefits can include commitments to hire directly from the community, local workforce training guarantees, contributions to local environmental remediation projects, and flexibility to address local concerns.

Between the VCEA¹⁷ and the Brownfield and Coal Mine Renewable Energy Grant Fund and Program,¹⁸ Virginia's laws incentivize the development of utility-scale solar in the built environment. This includes brownfields, previous coal mines, landfills, parking lots, retail, commercial, and industrial sites. Virginia should continue to incentivize projects in these locations to the maximum extent possible by pursuing federal funding and appropriating state funding.

Grid storage projects will be critical to maximize our renewable energy as it grows, so excess energy can be used at a later time. Incentivizing the deployment of grid-scale batteries with new or existing renewables is critical to maximizing the potential of renewables.

TOP TAKEAWAYS

The VCEA requires 16,100 MW of new solar and onshore wind for Dominion by 2035, and it's likely that utility-scale solar will compose the majority of this build-out.

All utility-scale solar projects should minimize grading, tree removal, and impacts on topsoil. Agrivoltaics should be encouraged and incentivized as an effective dual use of land that also preserves its future viability.

Projects should continue to be incentivized on the built environment. Increasing the allocation of renewable energy on "previously disturbed project sites" in the VCEA and allocating \$35M to the Coal Mine Renewable Energy Grant Fund and Program could speed the development of these projects.

ENDNOTES

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