Mitigating the Impacts of Solar Siting

WILL PARSON/CHESAPEAKE BAY PROGRAM

In a decade, the U.S. added over 209 gigawatts of solar energy capacity—an increase of 723%! Virginia is among the top 10 states in solar energy production. Most of the boom involves land-based arrays often developed on prime farmland, which tends to be flat, unshaded, well-drained, and close to existing grid infrastructure. Research from Virginia Commonwealth University shows that since 2016, around 40% of Virginia's utility-scale solar construction occurred on farmland. In response, Virginia is one of a few states working to mitigate the impacts of utility-scale solar development on agriculture.

Local governments also have pursued actions, such as creating overlay zones to site utility scale solar developments on disturbed lands and setting guidelines to encourage sound development. With clear guidance, balanced land use planning, and thoughtful decision-making, state and local governments can create policies to support both agriculture and solar energy.

Virginia Program Description

Virginia Executive Order Forty-Three set goals for renewable energy production. It was followed by the Virginia Clean Economy Act (VCEA) which amended state regulation of electric utilities to reduce carbon emissions. The VCEA established a mandatory renewable portfolio standard which is driving the creation of new solar arrays. Code of Virginia § 45.2-1708 requires local governments to promote renewable energy and generate electricity through technologies that do not contribute to greenhouse gases.

In 2022, Virginia passed House Bill 206 to address the impacts of these new policies. It requires a mitigation plan for energy projects that the Department of Environmental Quality (DEQ) determines will have a significant adverse impact on natural and historic resources including arrays that disrupt more than 10 acres of prime agricultural soils. DEQ is developing regulations to implement these requirements.

Purpose

The goals of Executive Order Forty-Three and the VCEA are to power 100% of Virginia's electric system with renewable energy sources by 2050. House Bill 206 seeks to mitigate significantly adverse impacts these may have on natural and historic resources. Combined, these pieces of legislation are meant to advance renewable energy in a sustainable and responsible way.

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How it Works

The VCEA provides clean energy targets and includes a few initiatives. It requires Virginia's two large, investor-owned utility companies (Dominion Energy and Appalachian Power) to retire carbon-emitting electrical generation facilities over time—when exactly depends on the type of plant. It establishes megawatt targets for wind, solar, and energy storage and sets new energy efficiency standards for utilities.

Local ordinances must be consistent with state policy, provide reasonable siting criteria, include reasonable requirements for buffers and setbacks, limit noise, and address generation facility decommissioning. Agricultural property owners are allowed to install solar panels to serve their own property needs, provided that installations comply with local zoning, height and set-back requirements, and any local historic, architectural, or corridor protections. These conditions apply to both roof and ground mounted panels.

Given public concerns, several codes govern local authority and decision making around utility-scale solar facilities:

- Virginia Code § 15.2-2288.7 allows localities to provide by-right authority to install solar arrays in any zoning classification and to require permits to guide disposal of solar panels.
- Virginia Code § 15.2-2241.2 directs bonding provisions for decommissioning of solar energy equipment, facilities, or devices and includes reasonable restoration including soil stabilization and revegetation of disturbed ground cover.
- Virginia Code § 15.2-2288.8 provides special exceptions for solar photovoltaic projects so that localities may grant special exception including in their zoning ordinances for any solar photovoltaic (electric energy) project or energy storage project.
- Virginia Code—Article 7.3 governs siting of solar and energy storage projects. It gives host localities powers to hire and pay experts, negotiate and enter into siting agreements with agreed-upon terms and conditions, including mitigation, compensation to pay for capital needs, and assistance to deploy broadband.

Considerations

Balanced approaches are needed to protect farmland while promoting renewable energy. Developing large expanses of farmland for solar arrays limits agricultural uses, drives up land values, displaces farmers who rent land, and increases barriers to land access for the next generation. AFT has developed a set of Smart Solar℠ principles and "Recommendations for State and Local Governments to Advance Smart Solar Policy" to address these issues.

House Bill 206 is a good first step. Local governments also can ensure their policies minimize farmland conversion—especially on the most productive soils—by encouraging solar arrays in ditches, on barns and other farm structures, incentivizing solar development on rooftops and on already disturbed lands like parking lots and brownfields. (See Zoning for Agriculture fact sheet.)

To Learn More

- American Farmland Trust: Smart Solar
- Energy Sage: "Solar Carveouts: What You Need to Know"
- VCU Wilder School of Government and Public Affairs: "Re-evaluating the Land Use Impacts of Utility-Scale Solar Energy Development in Virginia"
- Travis Grout and Jennifer Ifft: "Approaches to Balancing Solar Expansion and Farmland Preservation: A Comparison across Selected States"
- VALEN—Virginia Land and Energy Navigator