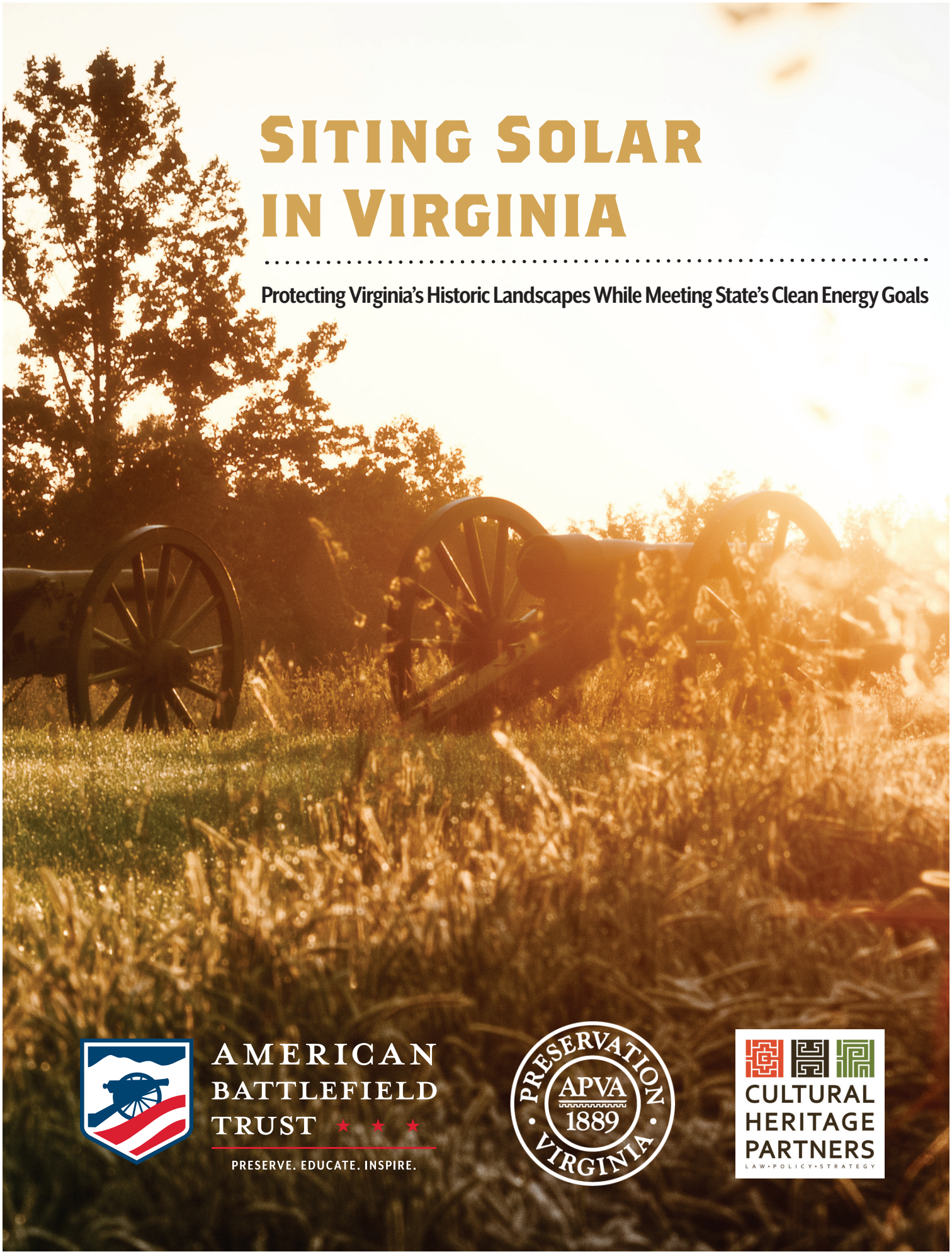

Siting Solar in Virginia

Protecting Virginia's Historic Landscapes While Meeting State's Clean Energy Goals

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INTRODUCTION

In recognition of the conflicts and points of connection between utility-scale solar energy development and historic preservation, the American Battlefield Trust, Preservation Virginia and Cultural Heritage Partners have collaborated to identify lessons learned from recent utility-scale solar energy developments in Virginia and surrounding areas on the East Coast, where challenges of location and scale are magnified due to their proximity to population centers and a wide array of historic resources. For example, when developers attempt to site utility-scale solar facilities on or next to historic places like Revolutionary War or Civil War battlefields—a common historic resource throughout the Mid-Atlantic—public opposition can quickly derail development plans. Avoiding or minimizing adverse effects on these resources is a fundamental way for developers to avoid conflict between increasing demand for alternative energy sources and a community's historic preservation goals. This tension is likely to grow as Virginia moves forward with aggressive clean energy commitments formally enacted in 2020.

To provide a context-sensitive path forward that reduces the risk of conflict between development and historic preservation goals, **PART I** of this report analyzes the range of historic preservation and cultural heritage concerns commonly encountered by solar energy developers building on an industrial scale in Virginia. Although open land in rural areas provides one of the least expensive places to build utility-scale solar facilities, one of the most contentious issues in energy development is the visual effect of these facilities on adjacent historic properties. An example is the visual intrusion caused by large solar panels on viewsheds, landscapes, and sites, which affects the way people experience and connect with these resources. This problem is magnified in Virginia, where solar development tends to take place within or alongside residential communities where populations tend to be relatively dense and have a greater concentration of residents interested in promoting historic preservation.

PART II provides regulatory context to help solar developers better understand historic preservation law and historic resource surveys as planning tools to reduce risk and

encourage collaborative solutions. Although federal preservation laws could affect project outcomes under certain circumstances, most utility-scale solar facilities require only state and local approval. Whereas some communities have been caught off guard by the rapid pace of utility-scale solar development, Culpeper, Virginia, has taken a lead on creating clear guidelines for developers to follow that avoid or minimize adverse effects to historic resources, including battlefields. Although local preservation laws have been used in the past in other places to block solar development, the current trend favors allowing the use of solar facilities, subject to compliance with Sustainability Guidelines, such as those issued by the Historic Preservation Review Board in Washington, D.C. Finally, solar energy developers should evaluate a local government's preservation program in connection with other land-use programs, such as comprehensive planning and zoning.

PART III highlights case studies to help solar developers gain more predictability in permitting, while at the same time eliminating or minimizing adverse effects on historic and cultural resources such as viewsheds and archaeological sites. The following case studies illustrate the range of outcomes for siting utility-scale solar facilities and identify factors that led to a project's success or failure:

Avoiding Adverse Effects:
Annapolis Renewable Energy Park, Annapolis, MD *(pg. 17)*

Designing for Solar In Historic Districts:
Rooftop solar panels, Washington, D.C. *(pg. 18)*

Battlefield Mitigation Funding:
Sol Madison Solar Project, Orange County, VA *(pg. 19)*

Historic Battlefield Impacts Defeat Solar Facility:
Cricket Solar Project, Culpeper County, VA *(pg. 20)*

Case studies include information about the state or local requirements that influenced project design, whether the project proponents took action to influence the outcome, and whether the government had a positive or negative impact for historic and cultural resources or for the project.

CONCLUSION

Solar energy development and historic preservation are not mutually exclusive goals. Conflict tends to arise, however, when developers fail to conduct due diligence about the historic and cultural landscapes on or near potential sites. Early planning by developers to avoid or minimize adverse effects to these landscapes is the first step to lessening conflict and lowering risk.

The following lessons to promote better permitting outcomes emerged from this report's research and analysis of case studies:

1. Locating utility-scale solar facilities on greyfield or brownfield land—or co-locating solar with existing urban uses, such as on rooftops or parking lots—provides the best opportunity for avoiding conflicts over greenfield land use and requires no additional land development.

2. Solar energy developers experienced the highest degree of permitting certainty and a near absence of opposition when siting projects that avoided adverse effects to historic resources. Siting a project in the middle of, or adjacent to, historic and culturally sensitive battlegrounds, Native American resources, burial areas, and cultural landscapes associated with these places creates the biggest barrier to success.

3. Developers who encounter and follow clear rules or operate within local governments with utility-scale solar guidelines increase the likelihood of positive permitting outcomes.

4. Developers who engaged with local communities, the Virginia Department of Historic Resources, and historic preservation advocacy groups—instead of ignoring concerns—succeeded in proposing creative mitigation solutions where particular adverse impacts could not be avoided.

5. Permit approval secured at the expense of public support will likely frustrate future expansion plans.

Virginia has abundant solar energy potential, along with one of the nation's most significant concentration of historic and cultural resources, including battlefields and Native American sites. Although the risk associated with utility-scale solar development will always be higher in states like Virginia when facilities are located near population centers with a high concentration of historic and cultural resources, early planning to avoid harm to historic resources and cultural landscapes will improve the likelihood of securing permit approval and building long-term community support.

Following best practices, including legal due diligence about how historic preservation law operates, can help ensure that solar energy development proceeds at pace—and in a context-sensitive manner respectful of immovable historic and cultural resources, enabling and facilitating consensus with the preservation community. With new solar projects already on the drawing board, and considering lessons learned so far, Virginia is well-positioned to advance its solar energy needs while balancing the public's interest in the preservation of the storied resources for which the state is internationally known.

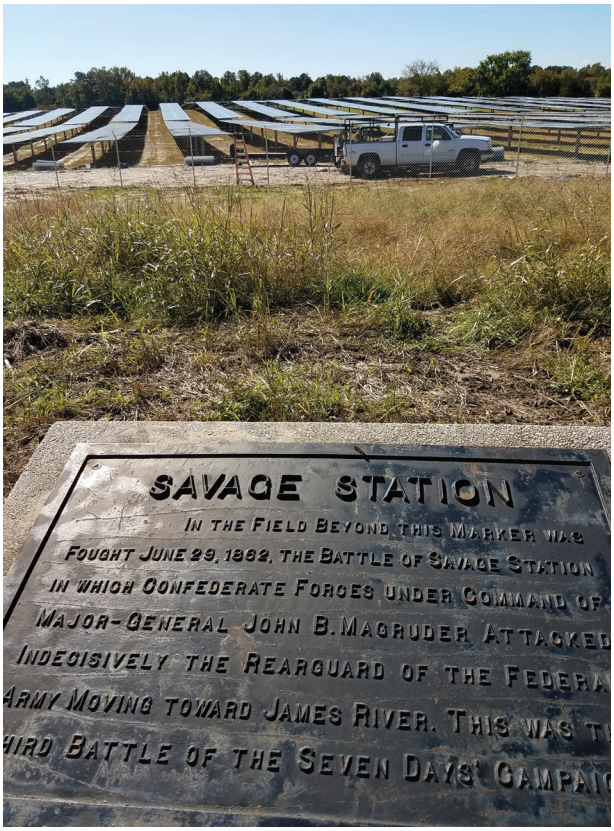
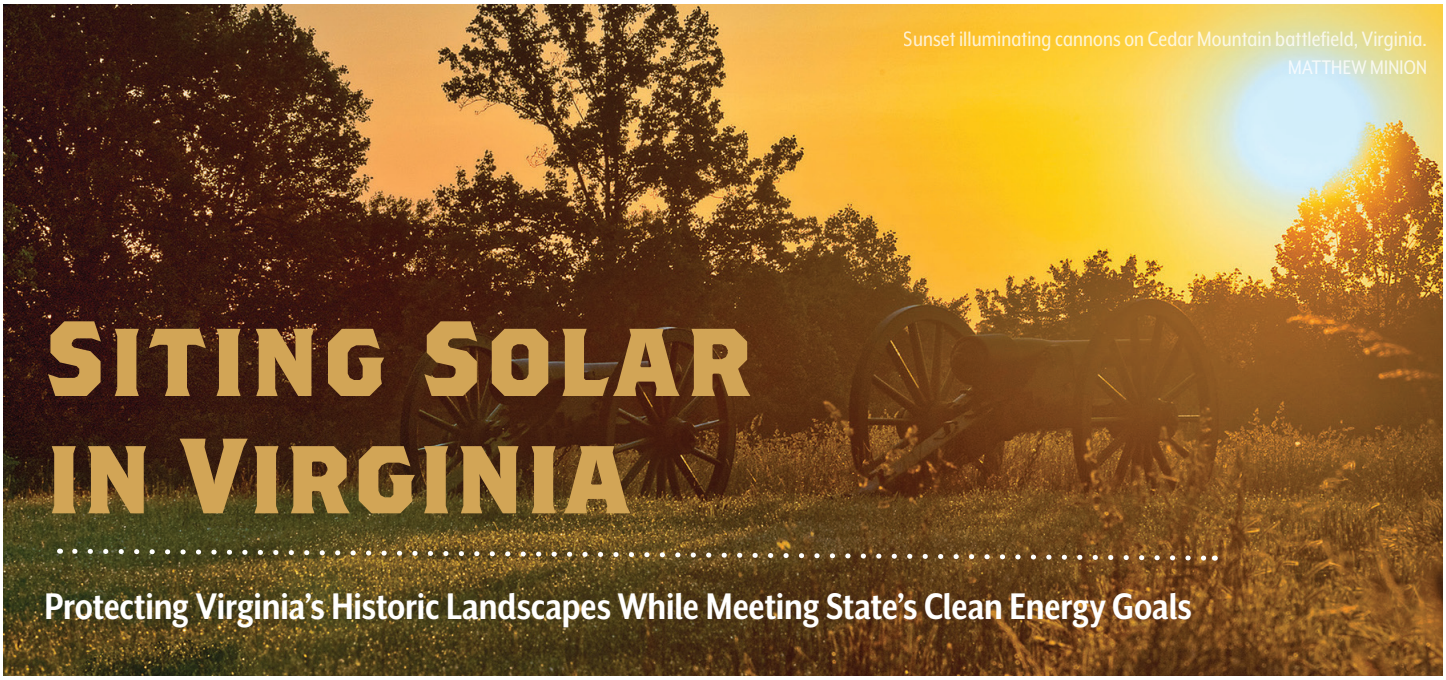


IMAGE LEFT: Savage Station, Va., June 27, 1862. Stereograph showing Army of the Potomac headquarters with railroad cars in the background, and covered wagons in the foreground before the battle began. LIBRARY OF CONGRESS

IMAGE RIGHT: Marker for the Battle of Savage Station today, overlooking a field of solar panels obstructing the battlefield land. MARC RAMSEY



Sunset illuminating cannons on Cedar Mountain battlefield, Virginia.
MATTHEW MINION

Siting Solar in Virginia

Protecting Virginia's Historic Landscapes While Meeting State's Clean Energy Goals

INTRODUCTION

Utility-scale solar energy development presents special challenges when sited on or adjacent to resources with historic and cultural significance.[1] Challenges of location and scale are magnified on the East Coast, where population centers and their proximity to historic resources tend to be more concentrated than the less populated open spaces typically found in most western states. For example, when developers attempt to site utility-scale solar facilities on or next to historic places like Revolutionary War or Civil War battlefields—a common historic resource throughout the Mid-Atlantic—public opposition can quickly and justifiably derail development plans. Avoiding or minimizing adverse effects on these resources is one way for developers to avoid conflict between increasing demand for alternative energy sources over fossil fuels and meeting historic preservation goals. Sweeping changes to clean energy laws in Virginia that require closure of all coal-fired plants by the end of 2024, Dominion Energy Virginia to be 100 percent carbon-free by 2045, and Appalachian Power to be 100 percent carbon-free by 2050 will require increased recognition of this tension.[2]

To help developers and preservation advocates find a mutually agreeable, context-sensitive path forward, the American Battlefield Trust, Preservation Virginia and Cultural Heritage Partners have collaborated to identify lessons learned from recent utility-scale solar project developments in the Mid-Atlantic.

1 "Utility-scale" solar facilities, the focus of this report, are very large arrays of solar panels located on open land. "Commercial" systems are smaller and tend to provide power for commercial or municipal buildings on campuses. "Residential-scale" systems provide power for use on a single property.

2 In Virginia, new clean energy laws went into effect on July 1, 2020. Known as the Virginia Clean Economy Act, the Act incorporates clean energy directions that the governor issued in Executive Order Forty-Three in September 2019. It results from extensive stakeholder input and incorporates environmental justice concepts. The law requires new measures to promote energy efficiency, sets a schedule for closing old fossil fuel power plants, and requires electricity to come from 100 percent renewable sources such as solar or wind. Energy companies must pay penalties for not meeting their targets, and part of that revenue would fund job training and renewable energy programs in historically disadvantaged communities.

PART I analyzes the range of historic preservation and cultural heritage concerns commonly encountered by solar energy developers building on an industrial scale in Virginia.[3] **PART II** provides regulatory context and helpful resources, such as historic resource reports, to help solar developers better understand historic preservation law as a planning tool to lower risk and encourage collaborative solutions with the preservation community. **PART III** highlights case studies to help solar developers gain more predictability in permitting, while at the same time minimizing adverse effects on historic and cultural resources such as battlefields, viewsheds, archaeological sites, and rural landscapes. The report concludes with a set of "lessons learned," developed from the case studies to guide utility-scale solar energy development in a way that protects historic resources, minimizes risk, and allows for more-predictable permitting outcomes.

PART I
SOLAR ENERGY DEVELOPMENT AND HISTORIC PRESERVATION ARE NOT MUTUALLY EXCLUSIVE GOALS.

Solar energy development. The pursuit of solar energy is quickening in Virginia, where energy consumption is 2.5 times greater than the energy the state produces.[4] Virginia ranks 17th in the United States in installed solar, with $1.43 billion in solar investment, almost 4,500 related jobs, and enough solar to power more than 123,000 homes.[5] As a clean alternative to energy derived from burning fossil fuels such as coal and natural gas, solar energy has been encouraged by Virginia's state government as not only good for the environment, but also for economic development. As noted earlier, the Virginia Clean Economy Act will accelerate clean energy demand by setting ambitious environmental goals.[6]

The Virginia Association of Counties has identified several factors leading to the rapid growth of utility-scale solar facilities in Virginia.[7] First, the cost of utility-scale solar has dropped 66 percent since 2010

3 The installation of solar panels on rooftops is considered a best practice in urban areas because it uses existing structures and requires no land development. In fact, the U.S. Department of Energy estimates that slightly over 32.4 percent of Virginia's energy needs could be met by rooftop solar. Pieter Gagnon et al., *National Renewable Energy Laboratory, Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment* 36 (Jan. 2016), available at https://www.nrel.gov/docs/fy16osti/65298.pdf. For examples of state and local governments that address the placement of solar panels on individual historic structures, the State of Connecticut; Town of Rutland, Vermont; and Washington, D.C., provide examples. In addition, Technical Preservation Services, a division of the National Park Service, gives additional guidance. See https://www.nps.gov/tps/sustainability/new-technology/solar-on-historic.htm. Demand for rooftop solar in Virginia is likely to grow, since Virginia's State Corporation Commission decided recently to re-open the popular Renewable Energy Pilot Program that allows customers, including local governments, school systems, and churches, to enter into "power purchase agreements," , or PPAs, with solar and wind energy companies. Under a power purchase agreement, a developer installs solar panels on a customer's property, such as a rooftop, and in return has the right to sell the energy back to the customer, usually at a price lower than what an existing utility can provide. For more information, see https://scc.virginia.gov/pages/Renewable-Energy-Pilot-Program.

4 Independent Statistics and Analysis, U.S. Energy Information Administration, "Virginia: State Profile and Energy Estimates" (Sept. 19, 2019), available at https://www.eia.gov/state/analysis.php?sid=VA#17.

5 Solar Energy Industries Association, "State Solar Spotlight—Virginia" (September 2020), available at https://www.seia.org/sites/default/files/2020-09/Virginia.pdf.

6 See note 2, *supra*.

7 Joe Lerch, director of Local Government Policy, Virginia Association of Counties, Utility-Scale Solar: VACo Seminar, available at http://www.vaco.org/wp-content/uploads/2019/06/JoeLerchSolarSeminar19.pdf.

and is projected to decline by an additional 3.6 percent per year in the next 10 years. Second, approximately 48 percent of Fortune 500 companies have sustainability and renewable energy commitments. Third, Virginia's General Assembly in 2018 set a goal for investor-owned utilities to construct or purchase up to 5,000 megawatts of solar capacity by 2028.

Solar power is anticipated to become the world's largest source of electricity by 2050, with solar power contributing nearly 27 percent to global overall consumption.[8] Solar facilities above a megawatt in size comprise the fastest growing sector within the solar energy landscape, including in Virginia, which, along with other southeastern states, has traditionally depended on fossil fuel sources, including coal-fired power plants. As public tolerance for air pollution and coal ash waste from fossil fuels has waned, demand for alternative energy sources has risen. In response, states have developed alternative energy policies and incentives to encourage the use of solar energy and to allow its development, shaping not only energy demand and supply, but also the physical appearance of the built and natural environments.

Historic preservation. Historic preservation is the movement, practice, and type of regulation that seeks to preserve and protect buildings, objects, landscapes, sites, and other artifacts of historic significance.[9] As the Supreme Court of the United States made clear in 1978 when it issued its landmark decision in *Penn Central Transportation Co. v. New York City*,[10] historic preservation in the United States is a valid public policy and a legitimate use of the government's authority to regulate for the public welfare. Since the Supreme Court decided *Penn Central* in 1978, more than 2,400 local governments have passed some form of historic preservation regulation, the vast majority of which was created following Congress' passage in 1966 of the National Historic Preservation Act to preserve, among other things, historic properties that protect our "sense of orientation as an American people."

But long before Congress and the Supreme Court acted, historic preservation started as a grassroots movement in the late 1880s—in large part to save sites associated with the founding fathers, such as George Washington's Mount Vernon in Alexandria, Virginia. Developers in any industry should not underestimate the value of history to Virginians and their pride at being the birthplace of the modern preservation movement. Mount Vernon may have garnered national attention first, but Virginians value many different kinds of history, from storied structures to legendary landscapes. Thus, it makes sense for developers to understand and balance these interests with new energy development that may adversely affect historic resources in a state where citizens appreciate history with a unique intensity and fervor.

8 International Energy Agency, *Technology Roadmap: Solar Photovoltaic Energy* (2014).

9 For an extensive review of historic preservation and renewable energy development, see generally, David A. Lewis, "Identifying and Avoiding Conflicts Between Historic Preservation and the Development of Renewable Energy," 22 NYU Environmmental Law Journal 274 (2015).

10 438 U.S. 104 (1978).

As historic preservation has evolved from its early origins and focus on the homes of significant political and military leaders, the movement's scope has broadened to encompass a wide range of historic places, such as battlefields, districts, archaeological sites, and other treasured lands, as well as traditional cultural properties, sacred places, and objects associated with the nation's diverse population and socio-economic groups. Moreover, as discussed in more detail below, preservation law and regulation have grown to preserve and protect historic properties not only from physical harm, but also from any adverse effect that damages a property's historic integrity, including, but not limited to, visual impacts.

Common reasons for conflicts. The tremendous growth of the solar energy market and rapid pace of development in recent years[11] have forced communities to grapple with how to balance their commitment to clean energy with other land-use needs, including historic preservation. Like other forms of development, solar energy creates benefits and costs. On one hand, solar development proponents contend that solar facilities are an impermanent and less destructive[12] form of development on agricultural land than more intensive development forms, such as homebuilding. On the other hand, conservation and preservation advocates argue that solar energy development destroys farms and historic viewsheds, in addition to threatening extant archaeological resources.[13]

Although open land in rural areas provides one of the least expensive places to build utility-scale solar facilities, one of the most contentious issues in energy development is the visual effect of these facilities on adjacent historic properties. An example is the visual intrusion caused by large solar panels on viewsheds, landscapes, and sites, which affects the way people experience and connect with these resources. When the resources are considered historic, the visual presence of massive solar facilities has the potential to harm the visual integrity that helps maintain their historic significance, thereby leading to legal consequences.[14] This problem is magnified on the East Coast, where solar development often takes place within or alongside residential communities where populations tend to be relatively dense and have a greater concentration of residents interested in promoting historic preservation.

11 According to the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy's "Solar Energy in the United States," solar power is more affordable, accessible, and prevalent in the United States than ever before. Since 2008, U.S. installations have grown 35-fold—enough capacity to power 12 million average American homes. Since 2014, the average cost of solar photovoltaic (PV) panels has dropped nearly 50 percent. Solar jobs have increased by nearly 160 percent since 2010, which is nine times the national average job growth rate in the last five years (internal citations omitted).

12 Although a utility-scale solar facility may be removable at some point in the future, eliminating existing patterns of land use, such as farming—along with those who maintain these patterns, such as farmers—diminishes the likelihood that the original use will resume.

13 Jack Jacobs and Emily White, "Solar Farms an Increasingly Popular Use for Rural Lands in the Region," *Virginia Gazette* (Nov. 12, 2019), available at https://www.dailypress.com/virginiagazette/va-vg-solar-farms-1113-20191112-jwghxszg5bcqxobbsd5vgnjtvq-story.html. Large-scale solar projects can also have impacts on water quality and use, as well as sensitive plant and wildlife habitats and wildlife species. Although addressing these impacts is essential for solar permitting, this Report has intentionally limited its review to development impacts on historic resources.

14 Integrity is the ability of a historic property to convey its significance. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling, and association. Adverse effects to any of these aspects of integrity diminish a property's integrity overall. National Park Service, *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* 44–45 (rev. 1997).

Solar energy development and historic preservation, however, are not mutually exclusive goals. Indeed, they can each promote economic development and environmental benefits. However, one of the trouble spots that has led to opposition to utility-scale solar facilities is the use of open land in rural areas. Rural properties are especially attractive to solar developers because of their inexpensive acquisition prices compared to those in suburban and urban areas, as well as the amount of developable land they provide. Even within the solar community, there is an ongoing debate over the use of rural areas versus using landfills and former industrial sites, as well as leveraging the potential of solar panels to be co-located along with other land uses in urban areas, such as rooftops and parking lots. One 2016 study of California solar energy potential, for example, found that rooftop and urban solar alone could meet at least 74 percent of that state's energy needs.[15] As of January 1, 2020, new homes in California must incorporate rooftop solar or include an offsite community solar option.[16]

Because of the large size of utility-scale solar facilities, developers have the potential to adversely affect a wide range of historic and cultural resources, including battlefields and Native American sites. Based on known examples of utility-scale solar energy developments in Virginia and Maryland and rooftop solar use in Washington, D.C., the most problematic projects for developers include those proposed that (1) are within boundaries of battlefields and historic areas or that create adverse effects on viewsheds to and from these areas, (2) affect the visual integrity of historic places such as battlefields, or (3) impact archaeological sites. **PART II** of this report provides a survey of the regulatory framework that governs how solar energy developers can improve decision-making when siting projects to avoid, minimize, or mitigate adverse effects on historic resources.

PART II
USE REGULATORY FRAMEWORKS, GUIDELINES, AND HISTORIC RESOURCE REPORTS IN EARLY PLANNING TO MINIMIZE RISK.

Historic preservation law can be understood as a layered system of federal, state, and local laws that seeks to protect historic and cultural resources through a variety of procedural and substantive mechanisms.[17] Understanding how these laws operate should form a part of any solar developer's due diligence. In many cases, these laws—along with historic resource reports—serve as helpful planning tools for developers to consider in designing projects to avoid or minimize conflict with historic preservation interests. Indeed, investments in responsible early planning of projects can reduce conflicts and potential delays during the

15 Peter Gagnon et al., *National Renewable Energy Laboratory, Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment* 35 (Jan. 2016), available at https://www.nrel.gov/docs/fy16osti/65298.pdf.

16 Sammy Roth, "California Will Still Require Rooftop Solar Panels on New Homes, At Least for Now," *Los Angeles Times* (Nov. 13, 2019).

17 Solar development on land owned by federally recognized tribes would be regulated by specific tribal preservation laws, if applicable.

permitting process, which can take more than three to five years to complete.[18]

Federal law. The primary historic preservation law at the federal level is the National Historic Preservation Act (NHPA). With its passage by Congress in 1966, it became the most comprehensive preservation law the nation had ever known, creating institutions to advance historic preservation goals and establishing a clearly defined process for historic preservation in the United States. As a result, changes to properties listed in or eligible for listing in the National Register of Historic Places—including landscapes—that are either owned by the federal government or made possible by federal funds or permitting now must conform to objective standards issued by the secretary of the interior.[19] The NHPA also requires states to take on more responsibility for historic sites in their jurisdictions. Each state now has its own Historic Preservation Office and is required to complete an inventory of important sites. Amendments added in 1992 allowed, for the first time, federally recognized tribes to create their own Tribal Historic Preservation Offices. The NHPA also created the President's Advisory Council on Historic Preservation, an independent federal agency, and the National Register of Historic Places, an official list not only of individual buildings and structures, but also of districts, objects, and archaeological sites important due to their connection with the past.

In addition, under a provision of the NHPA known as Section 106,[20] federal agencies must take into account the effects of their undertakings[21] on historic properties, which include any property listed in or eligible for listing in the National Register of Historic Places, including battlefields and other landscapes.[22] In addition, the Advisory Council on Historic Preservation must be given an opportunity to comment. Solar projects that use federal funding, are sited on federal land, or require federal permits—such as from the U.S. Army Corps of Engineers for impacts to wetlands—must undergo Section 106 review. The review process involves working with consulting parties[23] to find ways to avoid, minimize, or mitigate harm to historic resources caused by a project's direct, indirect, and cumulative effects.

18 Solar Energy Industries Association, Siting, Permitting & Land Use for Utility-Scale Solar (2019), available at https://www.seia.org/initiatives/siting-permitting-land-use-utility-scale-solar.

19 For example, see *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (1996), 36 C.F.R. § 68, and Charles A. Birnbaum, *Preservation Brief 36: Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes* (1994).

20 Specifically, Section 106 provides: "The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation . . . a reasonable opportunity to comment with regard to such undertaking."

21 A federal undertaking is any project that involves federal funding or requires federal permitting, management, or control. 36 C.F.R. § 800.16(y).

22 54 U.S.C. § 306108. Detailed information on the Section 106 review process is available on the Advisory Council's website: www.achp.gov.

23 Consulting parties are individuals and organizations with a demonstrated legal, economic, or historic preservation interest in an undertaking. 36 C.F.R. § 800.2(c). Consulting parties in Section 106 negotiations usually include, but are not limited to, statewide, local, and national preservation advocacy groups. Municipal governments, environmental organizations, community development organizations, and property owners may also qualify as consulting parties.

If consulting parties, the permit applicant, and the federal agency reach agreement on ways to avoid, minimize, or mitigate harm, the agreement is memorialized in a document known as a "memorandum of agreement" and becomes a legally binding contract. If a historic property is also recognized as a National Historic Landmark, then federal permitting agencies are required to apply a heightened duty to use all possible planning to minimize harm.[24] In either case, visual effects are considered adverse effects for purposes of the NHPA's Section 106 analysis.[25]

Along with the NHPA, the National Environmental Policy Act (NEPA) is another procedural statute that does not mandate a specific outcome. NEPA applies to all federally assisted and federally licensed actions, such as siting a project on federal land, accessing federally owned transmission lines, or obtaining a federal permit. It provides an opportunity for permitting authorities to consider the effects of federal government action on the natural environment, which includes historic, cultural, and sacred sites.[26] Unlike Section 106, however, NEPA review is not restricted to historic properties. In this way, NEPA's scope is broader than that of Section 106.

Under NEPA, a federal agency may not proceed with a proposed action until it performs an environmental review that includes meaningful consideration of alternatives to the proposed action that would avoid or have a less harmful impact. The review can either result in an Environmental Assessment or a more robust document known as an Environmental Impact Statement, if the federal agency determines that the proposed action will have a significant effect on the human environment. In either event, critical to the agency's analysis is whether a proposed action will have a significant effect on historic or cultural resources.[27] At issue may be the degree and manner in which a proposed action affects historic or cultural sites listed or eligible for listing in the National Register of Historic Places. Sometimes seemingly insignificant impacts, including visual intrusions, may rise to the level of a significant effect or cumulative impact when viewed collectively.

State law. No two states regulate solar energy development or historic preservation in the same way. In addition to statutes and regulations designed specifically to cover solar energy development, states also protect historic properties through their own laws and programs by maintaining state registers and

24 54 U.S.C. § 306107.

25 *Nat'l Parks Conservation Ass'n v. Semonite*, 916 F.3d 1075, 1077 (D.C. Cir. 2019*), rehearing* en banc *denied* (May 31, 2019), *amended on rehearing in part by* 925 F.3d 500 (D.C. Cir. May 31, 2019). See also *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (1996), 36 C.F.R. § 68, and Charles A. Birnbaum, *Preservation Brief 36: Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes* (1994).

26 42 U.S.C. §§ 4321-4375.

27 The Council on Environmental Quality (CEQ) oversees federal agency NEPA implementation and develops and recommends national policies to the president that promote the improvement of environmental quality. As of this writing, CEQ has eliminated consideration of cultural resources from its proposed update to the NEPA regulations.

protecting private properties from potentially harmful governmental actions, including permitting. These state preservation laws are often referred to as "state 106" laws. Based on Section 106 of the NHPA, these laws help ensure that the impact of state permitting decisions on historic properties is considered in the permitting process.

Although state historic preservation protection laws do not mandate preservation as an outcome, they usually provide a mechanism for requiring state agencies, in consultation with the State Historic Preservation Office (SHPO), to address actions that may harm historic resources.[28] Such acts may be avoided or at least mitigated through negotiation with a SHPO and interested parties. Regardless of whether governmental or private action is involved, the SHPO will serve as the state agency that solar developers with preservation issues are most likely to encounter. In Virginia, the SHPO is based within the Virginia Department of Historic Resources (DHR).

Solar developers can draw upon DHR's Archives for information regarding specific archaeological sites, architectural resources, historic districts and more, including relevant surveys and reports. Early preparation of a detailed historic resources assessment is helpful for developers, as such an assessment presents not only information on known historic resources within an envisioned project area, but also information on the potential to contain any unrecorded resources.

Virginia has not adopted a state 106 law, but ground-disturbing construction associated with the installation of solar panels may trigger application of the Virginia Antiquities Act (§ 10.1-2300 Code of Virginia), which applies to objects of antiquity located on archaeological sites on state-controlled land (§ 10.1-2302) and human burials located anywhere in the Commonwealth (§ 10.1-2305). From an industry perspective, obtaining development options on more land than is necessary to construct a solar project can be a prudent step to aid in the avoidance of archaeological sites and related resources.

In addition, Virginia has a bifurcated permitting system for solar projects based on their size. For solar energy projects of 150 megawatts or fewer, the Department of Environmental Quality (DEQ) has developed a renewable energy "permit by rule," , or PBR, to facilitate review.[29] A permit by rule is a permitting mechanism that means a project is deemed to have a permit if the project meets the requirements of the PBR regulation. Virginia's PBR includes the following requirements:

- Notice of Intent;
- Local government approval;
- Interconnection studies;
- Final Interconnection Agreement;

28 Some states, such as California, Connecticut, and New York, have state historic preservation laws that apply a heightened standard to avoid, minimize, or mitigate harm.

29 For more information, see the DEQ provides guidance about the PBR program: https://www.deq.virginia.gov/Programs/RenewableEnergy/SolarEnergy.aspx.

- Certification that the project does not exceed 150 megawatts;
- Air quality analysis;
- Cultural, wildlife, and natural heritage resources assessments;
- Mitigation plan, if appropriate;
- Coastal avian protection zone analysis;
- Certification if developer is utility or non-utility;
- Site map, context map, and operation plan;
- 30-day public comment period; and
- Permit fee.

Solar energy projects greater than 150 megawatts are not eligible for PBR permitting through DEQ. Instead, the State Corporation Commission (SCC) reviews these projects on a case-by-case basis, including public notice and comment periods, to determine whether to issue a Certificate of Public Convenience and Necessity[30]—a far more extensive, time-consuming, and uncertain process than DEQ's PBR program, especially considering that the SCC process does not remove the requirement that developers must also secure local government approval. In any event, DEQ's permit by rule approach purposefully leaves most decision-making power as to whether to approve a solar proposal with Virginia localities as opposed to the state, thus making permitting outcomes less predictable.

Local law. In certain states, including Virginia, decisions around local land use, site locations, and permitting fall within the jurisdiction of city or county governments, in addition to any state approvals that may be required. In many cases, however, local laws have not been adapted to contend with solar development needs. To address this gap, stakeholders came together in Virginia to craft model ordinances for local governments.[31] The Model Ordinance for Larger-Scale Solar Projects, for example, requires an applicant to "demonstrate through project siting and proposed mitigation, if necessary, that the solar project minimizes impacts on the visual character of a scenic landscape, scenic vista, or scenic corridor as identified in the comprehensive plan."[32]

In addition, some local governments in Virginia, such as in Culpeper County, have also established permitting guidelines. Going above and beyond Virginia's model ordinances, which do not address historic resources, Culpeper's "Utility Scale Solar Facility Development Policy" requires consideration of setbacks and buffering when a proposed site is next to a historic resource.[33] Moreover, "[c]ertain property,

30 Va. Code Ann. § 56-265.2(A)(1); 5 Va. Admin. Code § 5-20-80.

31 DEQ's Model Ordinance for Smaller-Scale Solar Energy Projects in Virginia (By Right Permitting) and Model Ordinance for Larger-Scale Solar Energy Projects in Virginia are available at https://www.deq.virginia.gov/Programs/RenewableEnergy/ModelOrdinances.aspx.

32 *Id.*

33 Culpeper's most recent version of this policy, inclusive of amendments added in late 2019, is available at https://web.culpepercounty.gov/Portals/0/Departments/Planning_and_Zoning/2019%20Amended%20Solar%20Policy%20(signed).pdf?ver=2019-10-08-112446-437.

because of its historic value, should be discouraged from [utility-scale solar development] entirely."[34] Culpeper's policy further prohibits locating utility-scale solar facilities anywhere within state or federally recognized historic battlefield boundaries and emphasizes that applications for facilities adjacent to battlefield lands under conservation easement are discouraged by the county. The policy also provides that visual impacts on property designated as historic shall be "minimized to the greatest extent possible."[35]

Typically, under local historic preservation ordinances, historic-property owners are required to obtain a permit from a preservation commission or other authority before altering or otherwise affecting a property situated within a local historic district—or if an affected structure, state, or object qualifies as a designated local landmark. Failure to obtain a permit may result in the issuance of a stop-work order, the imposition of fines and other penalties, and in some cases, a court injunction. These laws typically provide a much stronger level of protection for historic resources than the procedural protections afforded by federal preservation laws. Today, more than 2,400 historic preservation ordinances have been enacted across the country. Historic Preservation Commissions may have either binding or advisory review authority over historic designations or changes to historic properties, and in some cases, they must be consulted regarding other land-use actions affecting historic resources, such as a request for a variance or the subdivision of land. The Historic Preservation Commission is the governmental agency that grants or denies a permit to change historic property.[36] Local historical societies can also provide valuable historic resources information to guide solar siting decisions.

Although local preservation ordinances have been used in the past to stop solar installations within urban areas, the trend favors allowing solar rooftop installations, subject to compliance with Sustainability Guidelines, such as those issued by the Historic Preservation Review Board in Washington, D.C., the State of Connecticut, and the Town of Rutland, Vermont.[37] Finally, solar energy developers should also evaluate a local government's preservation program in connection with other land-use programs, such as comprehensive planning and zoning.

American Battlefield Protection Program and historic battlefield reports. Due diligence for any utility-scale solar development should include research on the front end of every project to determine the presence of historic resources. For developers in Virginia and in other states with a high concentration of battlefields, several resources provide helpful guidance. First, the American Battlefield Protection

34 *Id.* at I.A.ii.

35 *Id.* at 9.

36 Many rural communities and counties do not have local Historic Preservation Commissions, which eliminates an important level of legal review and places these communities at a disadvantage if utility-scale solar facilities are proposed that will cause adverse effects on historic properties.

37 For an analysis of the legal requirements governing the placement of solar panels on historic buildings, see U.S. Department of Energy, North Carolina Solar Center, and National Trust for Historic Preservation, *Installing Solar Panels on Historic Buildings: A Survey of the Regulatory Environment* (Aug. 2012), available at https://icma.org/documents/installing-solar-panels-historic-buildings.

Program (ABPP) within the National Park Service classifies the significance and preservation status of historic battlefield land.[38] The ABPP promotes the preservation of significant historic battlefields associated with wars on American soil. In addition to raising public awareness of the importance of preserving battlefields and related sites for future generations, the ABPP's goals are two-fold: (1) protecting battlefields and sites associated with armed conflicts that influenced the course of the nation's history, and (2) assisting with planning for the preservation, management, and interpretation of these sites. Furthermore, any battlefield or related site acquired with ABPP Battlefield Land Acquisition Grants cannot be converted to any use other than public outdoor recreation unless approved by the secretary of the U.S. Department of the Interior, and is subject to Section 106 review under the NHPA, in accordance with the Programmatic Agreement[39] covering the ABPP's grant programs.[40]

Second, in response to the creation of the ABPP, the Civil War Sites Advisory Commission (CWSAC) reported to Congress and the ABPP in 1993 on its analysis of significant battles and battlefields.[41] Of the many thousands of occasions in which hostilities occurred during the American Civil War, the CWSAC's *Report on the Nation's Civil War Battlefields* identifies the 384 battles determined to be the most significant. In addition, the CWSAC has classified and prioritized the sites covered in the report by significance and level of historic integrity.

Third, in addition to the CWSAC report, the National Park Service has prepared a separate *Report to Congress on the Historic Preservation of Revolutionary War and War of 1812 Sites in the United States*, with similar classification and prioritization.[42] For the purposes of that report, a "site" is defined as "a site or structure situated in the United States that is thematically tied with the nationally significant events that occurred during the Revolutionary War [and] the War of 1812." Thus, sites include more than battlefields, an important factor in determining the existence of historic resources in areas contemplated for utility-scale solar development. In addition, the ABPP stewards mapping resources related to the battlefields and sites highlighted in its reporting that are available for review. Taken together, the ABPP and the reports issued by the CWSAC and National Park Service covering the nation's Revolutionary War, War of 1812, and Civil War sites provide helpful guidance for developers. Using these resources helps steer site selection for utility-scale solar facilities away from historic resources that might otherwise present regulatory barriers and public controversy.

38 For more information about the ABPP, see 54 U.S.C. §§ 380101-380103 and https://www.nps.gov/orgs/2287/index.htm.

39 For a copy of the Programmatic Agreement, see https://www.nps.gov/subjects/battlefields/upload/ABPP-Nationwide-PA_FINAL-Executed.pdf.

40 For more information about the ABPP's grant programs, see https://www.nps.gov/subjects/battlefields/american-battlefield-protection-program-grants.htm.

41 To access this report, see http://npshistory.com/publications/battlefield/cwsac/report.pdf.

42 To access this report, see https://www.nps.gov/crgis/proj_Rev1812_Final_Report.pdf.

PART III
CASE STUDIES PROVIDE KEY "LESSONS LEARNED."

The following case studies illustrate the range of outcomes for siting utility-scale solar facilities and identify factors that led to the success or failure of a particular project. Highlighted projects in this report are:

Avoiding Adverse Effects:
Annapolis Renewable Energy Park, Annapolis, MD

Designing for Solar in Historic Districts:
Rooftop solar panels, Washington, D.C.

Battlefield Mitigation Funding:
Sol Madison Solar Project, Orange County, VA

Historic Battlefield Impacts Defeat Solar Facility:
Cricket Solar Project, Culpeper County, VA

Although the focus of these examples is utility-scale solar development that has addressed or avoided adverse effects to historic and cultural resources, one example is given for rooftop solar—Washington, D.C.—where the local government has worked to encourage and guide project design to increase the likelihood of permit approval. Although most examples of solar development in urban areas involve individual houses and would not qualify as "utility-scale," some solar developers—and indeed, some state and local governments—are considering ways to encourage rooftop solar installation at utility scale to include large commercial or industrial buildings and parking lots, which may or may not be located in locally regulated historic districts, as well as on unused brownfield and greyfield land.[43] This approach represents an effort to steer new solar development away from open rural land, agricultural land, and forestland to areas where solar energy projects can be co-located with other existing uses or in places in need of reuse, thereby reducing risk and increasing certainty in permitting outcomes.[44]

43 In addition to the Annapolis example illustrated in the case studies, ReVenture Park in Charlotte, North Carolina, is being developed by Forsite Development, Inc., on a former Superfund site and will include solar fields.

44 To lower risk, developers should also consider adverse effects on the natural environment, including streams, wetlands, and wildlife habitats, when siting solar energy projects. See, e.g., The Nature Conservancy in North Carolina, *Principles of Low Impact Solar Siting and Design,* available at https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/Documents/ED_TNCNCPrinciplesofSolarSitingandDesignJan2019.pdf.

CASE STUDY

Avoiding Adverse Effects

Annapolis Renewable Energy Park in Annapolis, Md., as seen on satellite.
GOOGLE EARTH

Project name: Annapolis Renewable Energy Park

Location: Former Landfill in Annapolis, MD

Project size: 18 megawatts; 54,000 panels

Land used: 80 acres

Permitting process duration: 8 years

Local government support: Yes

Historic preservation opposition: No

Description: Annapolis Renewable Energy Park is the largest landfill-based solar electricity project on the East Coast. Commentators have called it a model for resolving the conflict over how to balance clean energy development without sacrificing farmland and scenic vistas. Siting the project on an existing landfill was especially important in light of the project's close proximity to the Chesapeake Bay, where turning agricultural land into solar facilities could have had unintended consequences for water quality due to runoff.

In addition, Maryland conservation organizations worried about loss of agricultural land have pushed hard to help identify areas of previously disturbed land without competing uses, such as closed landfills, brownfields, and parking lots. By some accounts, 15,000 megawatts or more could be produced for the state by placing solar facilities on these types of sites alone. With strong support from the city and county governments, the Annapolis Renewable Energy Park opened in September 2018. Solar Builder awarded the project its 2018 Silver Project of the Year.

Did state or local regulation influence design? Yes. The developer avoided sites where Maryland state and local law would likely have presented regulatory barriers involving environmental law and historic resources.

How did project proponent influence outcome? Through proactive due diligence, the project proponent reduced permitting risk and cleared the way from the beginning of the permitting process by avoiding harm to open land, forestland, and wetlands, and areas with known historic and cultural resources. The project proponent gained support from the beginning from affected stakeholders, who became advocates for the project.

Did government have a positive or negative effect on historic resources or for the project? Positive. Because the project proponent selected the best possible site, a landfill, to avoid opposition, government support was positive from the beginning.

Reasons for Success: Strong local government support, support from the conservation community, lack of opposition from historic preservation advocates because of avoidance of adverse of effects to historic and cultural resources.

CASE STUDY

Designing for Solar in Historic Districts

Project type: Rooftop solar panels in local historic districts

Location: Washington, D.C.

Project size: Variable (small residential to large commercial)

Land used: Not applicable (solar panels placed on existing rooftops)

Permitting process duration: Staff response or approval possible within 5 days

Local government support: Yes

Historic preservation opposition: Initial opposition turned to support after the local Historic Preservation Commission adopted state-of-the-art Historic Preservation Guidelines to minimize solar panel profile and visibility as part of an overall sustainability program for historic buildings.

Description: After the D.C. Historic Preservation Office turned down a property owner's request to install solar panels on his rooftop in a local historic district of Takoma, public backlash caused the D.C. Historic Preservation Office to revisit the issue. In November 2019, the Historic Preservation Review Board issued a set of Sustainability Guidelines to assist property owners with energy retrofits for historic buildings.[45] Although the Historic Preservation Office still requires homeowners to seek approval for the color, location, and appearance of solar panels, they are no longer prohibited.

Reasons for Delay in Permitting: No delay should be expected as long as permit applicants follow the local government's Sustainability Guidelines.

Did state or local regulation influence design? Yes. Local Sustainability Guidelines provide advice and detailed illustrations to guide project planning and streamline approval.

How did project proponent influence outcome? By following existing Sustainability Guidelines that allow specifically for the installation of rooftop solar, the project proponent influenced the outcome.

Did government have a positive or negative effect on historic resources or for the project? Positive. D.C.'s Historic Preservation Review Board's Sustainability Guidelines are considered a win-win for solar developers, property owners, and preservation advocates.

45 https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/SustainabilityGuidelines-October24-2019-small.pdf.

CASE STUDY

Battlefield Mitigation Funding

Map of the field of operations in Virginia and Battle of Mine Run, during November 1863. LIBRARY OF CONGRESS

Project name: Sol Madison Solar Project

Location: Orange County, Va.

Project size: 62.5 megawatts

Land used: 400 acres

Permitting process duration: 3 years

Local government support: Yes

Historic preservation opposition: Initial, but resolved

Description: The project is expected to generate $60 million in local spending during construction. The developer has estimated the project will bring in $2.2 million to the county in machinery and tools tax revenue over the course of its life (assuming a 30-year lifespan). Furthermore, the project is expected to bring in an estimated $10,000 per year in additional property tax revenue to the county. According to the developer, the proposed operation will produce enough clean and renewable energy to power the equivalent of more than 10,000 single-family homes. The Virginia Department of Historic Resources (DHR) and Department of Environmental Quality determined that the project impacts historic resources, specifically the Mine Run Battlefield. The American Battlefield Trust coordinated with the National Park Service to ensure that the project site was free of any known historic earthworks. While the project does fall within the historic battlefield boundary, making its placement a sensitive issue, no citizens spoke out during public hearings in opposition.

Solution: To address adverse effects to the historic Mine Run Battlefield, the developer proposed and received approval for a pioneering mitigation plan that includes a commitment by the developer to make a $100,000 monetary contribution to the Virginia Battlefield Preservation Fund, which under Code of Virginia § 10.1-2202.4 is administered by the DHR for the purpose of making grants to private nonprofit organizations to match federal and other matching funds for the fee-simple purchase of, or purchase of protective interests in, Virginia battlefield property. Significantly, too, this mitigation funding was earmarked specifically for battlefield preservation within Orange County as the affected locality. Orange County also imposed 20 conditions on the permit prior to its approval, addressing issues ranging from adequate buffering to performance bonds. One of the conditions requires a vegetation buffer to obscure visibility of the facility from Route 20. The developer will also help fund oversight by an engineering firm of the project's compliance with all permitting and site plan review standards.

Did state or local regulation influence design? Yes. The developer's due diligence and county's use of permit conditions helped the project minimize harmful impacts to historically or environmentally sensitive sites that would have presented regulatory barriers and community opposition.

How did project proponent influence outcome? Working with the community and government officials proactively to design a mitigation proposal facilitated project approval.

Did government have a positive or negative effect on historic resources or for the project? Preservationists would have preferred no impact to the battlefield. However, government officials reached a negotiated solution with the project proponent to allow the project to move forward.

CASE STUDY

Historic Battlefield Impacts Defeat Solar Facility

Scene at the late reconnaisance at Morton Ford.
LIBRARY OF CONGRESS

Project name: Cricket Solar

Location: Culpeper County, VA

Project size: 80 megawatts

Land used: 1,600 acres; 380,000 solar panels

Permitting process duration: N/A; application withdrawn

Local government support: Divided

Historic preservation opposition: Yes

Description: A local group, Citizens for Responsible Solar, opposed the Cricket Solar project from the beginning, raising concerns about the preservation of sites such as the Morton's Ford Battlefield and a river crossing used by the Marquis de Lafayette and later by Union and Confederate troops. Along with recognition for its open space and conservation-based approach to maintaining its most-rural areas, Culpeper County is considered one of the most fought-over, camped-upon, and contested counties of the Civil War. Opponents also argued that the land should be considered hallowed ground because of the high likelihood that the remains of Civil War soldiers are buried there and would be disturbed by Cricket Solar's construction plans. Cricket Solar revised an early version of its plan that would have greatly impacted the site of the Battle of Morton's Ford, a federally recognized 1864 Civil War clash that left more than 300 dead. However, Cricket's revisions did not avoid adverse effects to the battlefield or surrounding historic lands. In addition, opponents objected to adverse effects on rural landscapes, which Cricket Solar's plans did not address.

Reasons for Delay in Permitting: Local opposition to Cricket Solar's plans and a lack of local consensus for a land-use vision created delay. A lack of permitting clarity also contributed. Culpeper's Board of Supervisors had previously adopted a set of guidelines for utility-scale solar facility development, but Cricket Solar withdrew its plans after revising them at least twice.

Did state or local regulation influence design? Although the local government had developed a Utility Scale Solar Facility Development Policy, the project proponent did not go far enough in designing its project to avoid regulatory conflict.

How did project proponent influence outcome? The project proponent never met with preservationists to identify and resolve issues, and then made a series of missteps by proposing a large-scale solar project in an area that, while removed from the core battlefield, remained within the larger battlefield boundary and lands widely understood to be historically and culturally sensitive. Project opponents seized on this disconnect to energize public opposition.

Did government have a positive or negative effect on historic resources or for the project? Indeterminate, insofar as the project proponent withdrew its application for a permit—which it had filed in December 2018—in August 2019. Since that time, Culpeper County has adopted additions to its Utility Scale Solar Facility Development Policy to provide guidance on future projects, with the goal of preserving farmland, protecting historic resources, and ensuring compatible development with neighboring properties by limiting the scale and acreage of solar facilities.

CONCLUSION

SITING SOLAR IN VIRGINIA: PROTECTING VIRGINIA'S HISTORIC LANDSCAPES WHILE MEETING STATE'S CLEAN ENERGY GOALS

Solar energy development and historic preservation are not mutually exclusive goals. Conflict tends to arise, however, when developers fail to conduct due diligence about the historic and cultural landscapes on or near potential solar sites. Early planning by developers to avoid or minimize adverse effects to these landscapes is the first step to minimizing conflict and lowering risk.

The following lessons learned emerged from this report's research and analysis of case studies to promote better permitting outcomes:

- Locating utility-scale solar facilities on greyfield or brownfield land—or co-locating solar with existing urban uses, such as on rooftops or parking lots—provides the best opportunity for avoiding conflicts over greenfield land use and requires no additional land development.[46]

- Solar energy developers experienced the highest degree of permitting certainty and a near absence of opposition when siting projects that avoided adverse effects to historic resources and rural areas connected to nearby communities. Siting a project in the middle of or adjacent to historic and culturally sensitive battlegrounds, Native American resource, burial areas, and rural landscapes in proximity to these places creates the biggest barrier to the success of a given solar project.

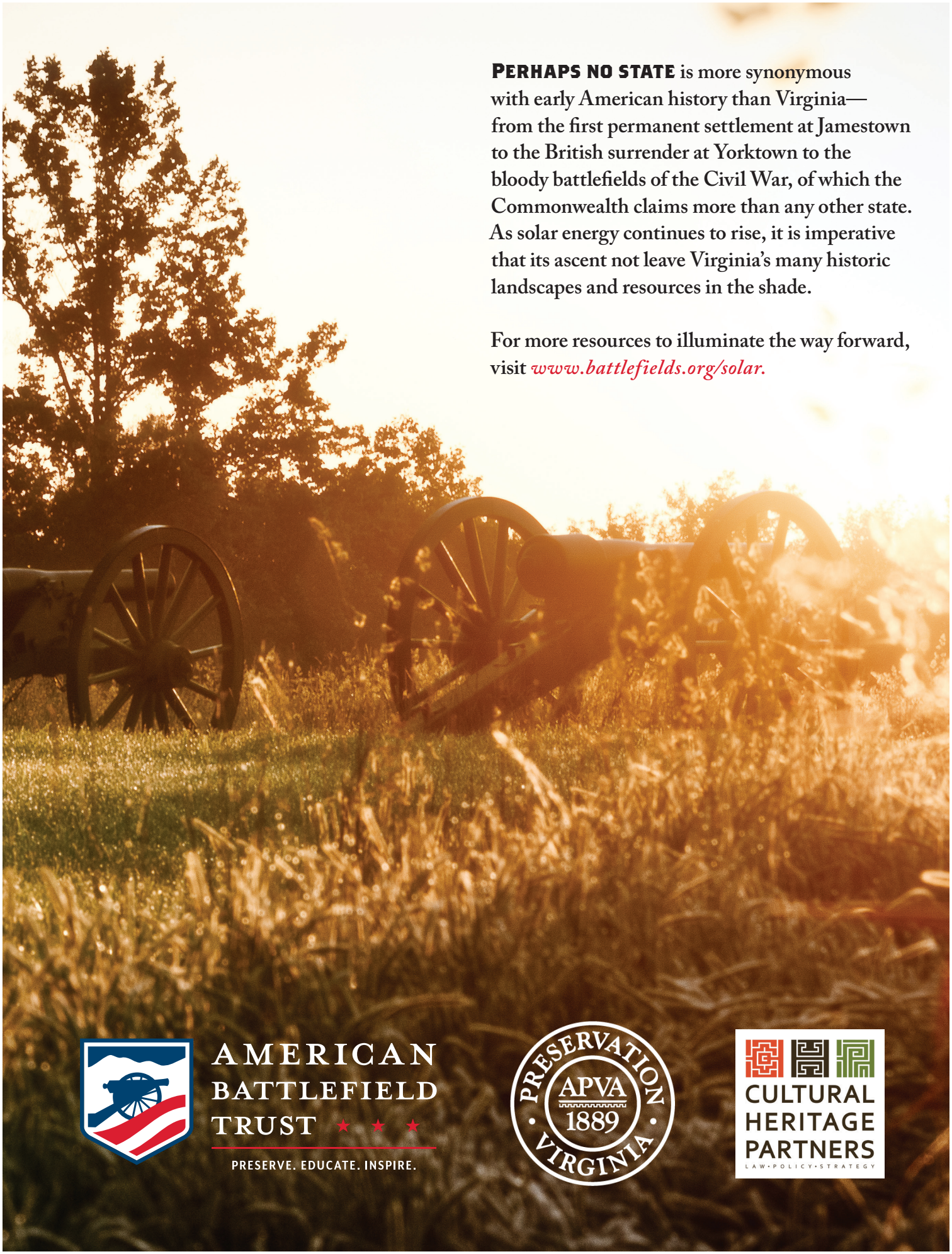
- Developers who encounter and follow clear rules or operate within local governments with utility-scale solar guidelines increase the likelihood of positive permitting outcomes.

- Developers who engaged with local communities, the Virginia Department of Historic Resources, and historic preservation advocacy groups—instead of ignoring concerns—succeeded in proposing creative mitigation solutions where adverse impacts could not be avoided.

Virginia has one of the nation's most significant concentration of historic and cultural resources, including the greatest number of federally prioritized Civil War battlefields in the country. Although the risk associated with utility-scale solar development will always be higher in states like Virginia when facilities are located near population centers with a high concentration of historic and cultural resources, early outreach to and planning with preservationists to avoid harm will improve the likelihood of securing permit approval and building long-term community support and consensus.

With new solar projects already on the drawing board, and in light of lessons learned so far, Virginia is well-positioned to advance its energy needs while balancing the public's interest in the preservation of the historic and cultural resources for which the state is internationally known.

46 For additional guidance on ways to avoid other environmental impacts, such as harm to wildlife habitat and water quality, see The Nature Conservancy in North Carolina, Principles of Low Impact Solar Siting and Design (Jan. 2019), available at https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/Documents/ED_TNCNCPrinciplesofSolarSitingandDesignJan2019.pdf.



PERHAPS NO STATE is more synonymous with early American history than Virginia—from the first permanent settlement at Jamestown to the British surrender at Yorktown to the bloody battlefields of the Civil War, of which the Commonwealth claims more than any other state. As solar energy continues to rise, it is imperative that its ascent not leave Virginia's many historic landscapes and resources in the shade.

For more resources to illuminate the way forward, visit *www.battlefields.org/solar.*

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