Smart Solar Siting for New England

Rapidly scaling up New England's solar photovoltaic (PV) resources to meet the region's decarbonization goals will require developing solar projects in a way that minimizes negative impacts on open space, forests and farmlands. Through the Smart Solar Siting Project for New England, American Farmland Trust, Acadia Center, Conservation Law Foundation, Vote Solar, and Vermont Law School are developing research and guidance to reduce conflicts over siting of solar facilities by reaching agreement among multi-stakeholders on smart solar siting principles, policies, and programs. Project partners are preparing a number of research summaries, policy analyses, and assembling additional resources that together assess each New England State's potential to meet their climate and solar generation goals while protecting the region's best farm and forest land

POLICY STRATEGIES FOR FARMLAND PROTECTION

The pressure to engage in strategies to mitigate climate change at the state level are increasing. In order to take action, states should develop concrete clean energy goals within a statewide climate action plan based on the latest science. State climate action plans should include clear, concise climate goals and legally enable state agencies to make progress towards meeting those goals.

Clean energy plays a significant role in meeting climate mitigation goals. Development of renewable energy sources, improved energy efficiency, and electrification are all necessary for climate mitigation. However, with increased renewable energy development, such as solar, comes increased demand for land. The following policy strategies for solar siting were developed by Vermont Law School as part of this partnership and are aimed at the New England region. These are laid out as a menu options, which will need to be combined based on unique factors in a given state or locality. They are intended to help states address the land-use conflict between solar energy and farmland.

I. DIVISION OF REGULATORY AUTHORITY

Solar development is regulated by both state and local governments. This division of labor and authority affects both project oversight and opportunities for policy advocacy. Depending on the state, solar arrays will need to be approved by a variety of state and local land use and energy regulatory authorities. Lawmakers and advocates seeking to change solar policy must first understand established divisions of labor and authority among regulatory bodies. They should carefully consider where changes are most likely to be effective, given the established structure of state and local government, and the scope of authority and expertise of the regulators involved.

POLICY STRATEGIES

1. Consider the scope of authority of existing regulatory bodies and take advantage of existing divisions of labor and expertise.

Solar siting policies are not found in any one state law, but include an assortment of state and local requirements, with state and local governments often sharing or dividing authority over solar project approval.

a. Public Utility Commissions and Departments of Energy

State public utility commissions (also called public service commissions or boards) regulate how electric service is provided to customers, and the rates charged for electricity. They often develop regulations about how state energy goals are met, establish rules for net metered solar arrays and approve other utility tariffs for solar development. They may have a role in siting approval or standards for new solar arrays. Departments of Energy are also likely to play a role in solar policy development or implementation.

b. Agencies of Agriculture and Forestry

State agencies are usually responsible for making and implementing rules related to farming, farmland, forestry, and food. How each state defines categories of farmland within existing state agricultural laws may provide a basis for creating rules for solar development on different types of land. In addition, existing laws with regard to development of farmland may apply to solar projects.

c. Agencies of Natural Resources or Environmental Protection
State natural resource agencies are often delegated broad authority over water and air quality, soil health, wildlife, and land management. Solar arrays may require one or more natural resource management permits addressing wetlands protection, erosion, land disturbance, and stormwater management either through independent policy or broader regulation of development. State natural resource agencies are also well-suited to identify alternate sites for solar development, including brownfields, landfills, superfund sites, and previously developed land.

d. Departments of Taxes
States often incentivize solar development through tax incentives or abatements. State and local tax authorities may also implement "current use" taxation programs for farmland, forestland, and/or open space with specific rules for solar development on enrolled land.

e. Local Boards
Local planning and zoning boards, agricultural districts, soil and water conservation districts, conservation commissions, and other entities may have authority over aspects of solar development or relevant expertise to contribute to solar policy discussions.

2. Ensure that funding and staffing is sufficient to implement new administrative requirements.

New administrative requirements or review processes for solar development can be burdensome for regulators at the state and local level or require significant new expertise. Regulatory and administrative staff or funding may need to be increased to ensure resources are adequate to implement solar policy mandates.

3. Different regulatory structures require different approaches to farmland solar policy development, policy advocacy, and policy change.

A multi-pronged approach to policy advocacy may be necessary to advance farmland solar policy, including participation in state legislative actions, agency rulemakings, and the development of specific local ordinances and model laws.

II. REGULATORY DEFINITIONS FOR "FARMLAND" and "SOLAR"

Establishing legal definitions for "farmland" and "solar development" can improve the clarity and specificity of regulations and create regulatory options for treating different projects differently. State laws may be designed to apply only to certain kinds or categories of farmland or solar development, and it is crucial to be purposeful about the lands or projects affected by new rules. State and local governments will benefit from reviewing relevant legal definitions of farmland when establishing new solar development laws. This review should consider the interaction of new and existing regulatory categories for farmland with new and existing regulatory categories for solar development, as well with other applicable state and local laws governing land use and environmental permits.

POLICY STRATEGIES

1. Use regulatory definitions or categories to treat different types of farmland differently.

Clear regulatory definitions can identify certain types of farmland as eligible for solar development incentives or subject to solar development prohibitions or conditions. To create different regulatory categories of farmland, policymakers can consider incorporating or modifying the following definitions:

a. Federal Farmland Protection Policy Act Definitions

The Code of Federal Regulations (CFR) at 7 CFR § 657.5 defines several categories of important farmland in the United States under the Farmland Protection Policy Act (FPPA), including 1) prime farmland, 2) unique farmland, 3) additional farmland of statewide importance, and, 4) additional farmland of local importance. The FPPA definitions for farmland are often borrowed for other statutory purposes, including rules for solar development.

b. USDA Census of Agriculture Definitions

The Census of Agriculture collects data on all farmland and active farms in the United States, and the United States Department of Agriculture's Economic Research Service has developed extensive definitions in pursuit of accurate data collection. These categories may be useful to policymakers attempting to target certain types of farmland for solar development restrictions or incentives.

c. Existing State Definitions.

State law or agency regulations may already define one or several meanings for the words "farm," "farmer," "farmland," "agriculture," "agricultural use," or "land in agricultural production" to serve different purposes in different laws and regulations. Definitions may be based on a list of crops or specific agricultural uses, the suitability of certain lands for farming, or on the farm's acreage or income generated from farm products. These existing definitions may be appropriate for incorporation into solar development laws.

2. Define farmland/agriculture within the Energy Title of state code to improve regulatory clarity.

Lawmakers can also define types of farmland or agricultural uses within the chapter or title of state code applicable to public utilities, or within specific solar development or rate incentive programs. This provides clarity regarding definitions of farmland or agriculture within the energy development context.

3. Use regulatory definitions to treat different sizes and types of solar installation differently.

Categories based on specific characteristics of a solar array are useful for drawing boundaries around solar development regardless of where in state or local law solar policies are found or which entity is charged with their implementation. Regulatory categories can help incentivize solar arrays that are low-impact, uncontroversial, and clearly in the public interest, while ensuring oversight of projects that may lead to the loss of important farmland and other natural resources, or significant community conflict. In addition, different forms of oversight will be required for different types of projects, for instance a rooftop solar array at a farm facility will be unlikely to require oversight from a department of agriculture. Policymakers can consider regulatory definitions based on solar array size, location, and/or design:

a. Categories based on Solar Array "Size"

State and local laws can categorize solar projects using characteristics like the capacity of the array, its land use footprint, or an electric load associated with the array, all of which can loosely define the "size" of a given solar project. Size-based restrictions are the most common regulatory strategy used in state solar development laws. They draw bright lines useful for establishing basic program eligibility or the imposition of relaxed or special compliance obligations in law and give regulators a simple yes-or-no answer for many development applications. The overall size of an array may affect nearly every aspect of project development including its land use impacts, aesthetic significance, effect on electric reliability, permitting requirements, and interconnection costs, as well as its economic potential. The questions of "how small?" and "how large?" are a matter of local decision-making and have no single correct answer.

Array Capacity

Regulatory categories based on array capacity are the most common policy design states use to treat solar projects differently. The capacity of a solar array refers to how much power or electricity it can be expected to generate.

On-site or Associated Electric Load

Regulations may require or differentiate based on solar arrays sized to meet the needs of a specific electric load, like an on-site or other identified business, residence, or farm. There are benefits to the electric grid and potential impacts on project siting associated with projects that are sited alongside existing electric demand.

Land Use Footprint

A solar array's land use footprint measures the acreage of land underlying the array. Higher-capacity arrays are likely to have a larger land use footprint. However, this generalization may be misleading as to some agrivoltaic projects, as the land use footprint of smaller capacity arrays is likely to increase when designed to accommodate agricultural land uses. Limitations on an array's land use footprint can also be tied to the total parcel size, restricting solar to a certain percentage of the total land area.

Customer Type: Residential, Commercial, Industrial, Agricultural or Low-Income

Regulations based on customer type identify the end-use entity consuming the electricity or receiving the electric credits generated by the project and how that end user is classified in a utilities' established electric rate structures for different customer classes. Regulatory categories based on customer type can align new renewable energy development rules with existing utility practices. They may be particularly useful when a utility is delegated the task of designing and implementing a net metering program. Some states also put solar projects into a special regulatory category when the electricity will be used by a farm or other agricultural consumer. Preferential siting or financial treatment of projects serving priority populations or industry sectors, such as low-income or agriculture, can also serve to fulfil state or local economic goals.

b. Categories based on Solar Array "Location"

Lawmakers can categorize solar projects based on their proposed location to steer development toward or away from certain lands, or to require that projects in sensitive locations meet protective conditions for array construction and operation. States and local governments will benefit from creating lists of "preferred sites" and "ineligible locations" for solar development that can be integrated into solar policy via siting and permitting processes and rate mechanisms. These lists should be analyzed along with the climate and clean energy goals held by the state and local governments to ensure a realistic and affordable path to achieving those goals. States and local governments may desire to create lists of lands falling into a variety of categories (preferred sites, eligible but not preferred, ineligible) to meet their own purposes.

Roof-mounted

Creating a regulatory category for roof-mounted solar arrays is low-hanging fruit for farmland solar policy. Lawmakers can make it easier for consumers to mount solar on their homes and businesses, thereby limiting any land conservation impacts, by easing land use and energy permitting requirements or providing additional incentives for roof-mounted arrays.

Preferred Sites for Solar Development

Some states are working to direct solar development using an incentive or requirement for locating projects on "preferred sites," such as roofs, carports, canopies, other alternative structures, landfills, brownfields, previously developed sites, bodies of water, or sites identified by specific energy planning processes. Preferred siting policies can help to conserve farmland and other greenfields, lower development costs by encouraging reuse of existing infrastructure, incentivize remediation of previously developed properties and brownfields, support the grid by siting solar arrays close to electric load, and increase community consensus. Policymakers should include locations in preferred siting that contribute to equitable siting, which takes into account the environmental and economic benefits of solar projects as well as potential conservation impacts. Low-interest loans and financing can also be used to incentivize solar development on preferred sites.

Ineligible Sites

In addition to identifying specific sites or site-types that states or localities prefer for solar development, lawmakers may find it useful to identify sites that are ineligible for solar development. Ineligible sites might include certain greenfields, prime farmland, land subject to conservation in perpetuity, historic sites, or other protected lands. Policy makers are encouraged to use restrictions on sensitive lands, and only establish prohibitions on solar where absolutely necessary, so as to avoid excluding residents from the benefits of clean energy.

c. Categories based on Solar Array "Design" - Agrivoltaic or Dual Use Arrays

Lawmakers can regulate solar projects based on their proposed design or create specific design standards for array construction and operation. Deciding on design standards for new solar installations is "higher-level" policy creation, likely to occur after states have put basic size and location regulations in place.

Voluntary Standards, Mandatory standards, and Site-specific Analyses

States can regulate the design of solar arrays by establishing voluntary or mandatory design requirements for new installations, requiring that arrays are able to meet outcome-based standards, or by creating a process to develop array-specific or site-specific design requirements or performance standards. Attention should be paid to the cost impacts of these standards on project development and how that may impact achievement of climate and clean energy goals.

Define agricultural dual-use solar and sub-categories

An "agrivoltaic" or "dual use" policy allows, incentivizes, or requires a solar array on farmland to exist alongside agricultural uses, so that the land is used both for energy generation and farming concurrently. Incentives for dual use or agrivoltaic projects may be structured within rates paid for energy under state net metering programs or feed-in tariffs, or may be stand-alone incentives. States can define a specific set of agricultural dual use practices, like sheep grazing or crop production, that are eligible for incentive programs, or they can establish flexible design standards for project qualification, like incentivizing solar arrays that achieve less than 50% shading of the underlying land.

The following options can help to define "agrivoltaic" solar projects in policy:

- Define installation characteristics for qualification as dual-use and additional sub-categories.
- Create voluntary dual use standards or recommendations.

- Establish specific minimum standards for dual use projects.
- Allow design flexibility to support varying agricultural activities without unnecessary costs.
- Engage agencies of agriculture to develop evidence-based criteria for dual use qualification.
- Employ 3rd party certifier to assess project standards and eligibility for dual-use designation.

Require monitoring and reporting of agricultural activity at dual-use installations.

Regardless of how a state defines "agrivoltaic" solar arrays, monitoring and reporting requirements should be included to ensure continued agricultural use. The following policy options can help promote agrivoltaic arrays while helping to ensure continued agricultural use or production:

- Dual-use incentives are contingent upon continued agricultural production.
- Enable farmland enrolled in current use taxation programs to install dual use solar arrays.
- Require monitoring and reporting of agricultural uses under and around solar arrays.
- Require farm transition planning to ensure continued agricultural production.

III. CLIMATE, CLEAN ENERGY, AND RENEWABLE ELECTRICITY GOALS

Many states have implemented their own goals and mandates regarding climate change, renewable energy consumption, energy efficiency, greenhouse gas emissions, and de-carbonization, which can affect the quantity and characteristics solar sited on farmland. As solar energy does not emit greenhouse gases and qualifies as a renewable energy source, state climate and energy policies tend to incentivize and accelerate solar development. Land use restrictions and siting incentives can be built into state climate and energy goals to protect farmland and agricultural uses.

State **renewable portfolio standards (RPS)** mandate the increased production of renewable energy by requiring retail suppliers of electricity to obtain an escalating percent of their supply from renewable sources by an identified year. **Renewable energy procurement laws** may also require utilities to procure a certain amount of renewable energy capacity by a target date and offer a special rate for the purchase of energy from desired projects. States may also use **comprehensive energy planning** to create a roadmap for meeting future energy needs, and these plans may provide additional information about implementation of the state's RPS policy and other renewable energy initiatives.

POLICY STRATEGIES

1. Use regulatory definitions to identify preferred sources of renewable energy.

State lawmakers may designate preferred or required sources of renewable energy within an RPS or other mandate for clean electricity. Using smart regulatory definitions for eligible solar projects ensures that a certain percentage of incentivized energy comes from projects of a preferred size or type. Lawmakers can define needed or wanted solar arrays by creating classes or tiers of energy based on project size or location.

2. Include Carve-outs based on project size and preferred technology.

Policymakers can incentivize smaller-scale solar development by designating that a certain percentage of their RPS obligation be met by obtaining RECs from projects of a limited capacity size. RPS laws may target solar development specifically or may incentivize smaller-scale distributed renewable energy generation without identifying a required technology.

3. Include Carve-outs based on project location.

States could write land use requirements into RPS carve-outs for solar energy. Carve-outs could be established for solar arrays on rooftops, brownfields, parking lot canopies, or other preferred site-types, regardless of the geographic location of such projects in the New England region.

4. Consider equity and transparency in REC ownership.

States must be absolutely clear about Renewable Energy Certificate (REC) ownership and transfer rules within renewable energy development policies, including whether contracts or subsidies for renewable generation require any transfer of RECs in return for the funding. Individuals and businesses hosting solar arrays may not clearly understand how their ability to make "green claims" about the energy they use changes depending on whether RECs are kept or sold. Policymakers can require disclosure and consumer education about REC allocation and sales in net metering and solar development incentive programs.

5. Require data collection and robust compliance reporting.

Mechanisms to evaluate whether and how intended benefits are achieved should be written into program laws and regulations. Policymakers should require data collection on the size, location, and design of renewable energy sources used to meet regulatory requirements and other goals. Opportunities for stakeholder feedback and program review should also be established. Data collection and reporting are crucial for benchmarking progress toward achievement of goals and identifying challenges in program implementation.

IV. STATE LAND USE AND ENERGY PERMITTING LAWS

State land-use and energy permitting policies include all the necessary steps required to obtain approval to install a solar array. Permitting policies differ from state to state, and may require submission of a single application to a state-level siting board or separate approvals from state public utility commissions, interconnecting utilities, and municipal-level planning, zoning, and/or conservation boards. Traditional land use development and environmental regulations are also likely to apply to new solar installations, including review for compliance with state laws regarding wetlands, endangered species, other protected natural resources, storm water run-off, land disturbance, surface and ground water quality, shoreline protection, agricultural protection, and erosion prevention. It is important to understand what state and local agencies have jurisdiction over these issues before attempting to modify or improve existing permitting policies.

The way that administrative and regulatory processes are set up and implemented can incentivize certain types of development. State permitting policies can be complicated, expensive, and time-consuming, so easier pathways to project approval can act as a regulatory incentive for project development.

POLICY STRATEGIES

1. Create a role for the state agency of agriculture in evaluating and conditioning solar siting policy or individual projects located on agricultural land.

Successfully protecting farmland and promoting agricultural use within solar development policies requires knowledge of state agricultural land characteristics and familiarity with agricultural soils and impact mitigation strategies. States can take advantage of the expertise of agencies of agriculture in developing and implementing criteria for solar development on agricultural land, and in project review and approval. However, it is important to acknowledge that these agencies may not have expertise in solar or energy development, so their role should be carefully defined within their expertise or additional capacity will be needed to support their effective review.

Smart Solar Siting for New England

A variety of roles for the state agency of agriculture can be inserted into state siting and permitting processes:

- Agency receives notice of projects.
- Agency reviews project applications, evaluates impacts, and suggests conditions.
- Agency is a statutory party to public hearings.
- Agency certification is required for project approval.
- Enable a role for agencies of agriculture or soil and water districts in municipal processes.
- Provide advocacy role for state agency if statutes limit active regulatory role.

2. Require the permitting authority to consider impacts to prime agricultural land and prime soils and establish standards for arrays located on agricultural land.

State and local energy siting authorities can adopt specific criteria for reviewing and permitting solar projects proposed for installation on agricultural land. The permitting authority can require the applicant to submit information about potential impacts to farmland and agricultural uses and can develop specific criteria or performance standards that solar arrays must meet. The permitting authority can also require third-party certification of impacts to farmland or compliance with farmland protection criteria. States integrate farmland protection criteria into permitting review processes in a variety of ways:

- Applicant submits information concerning impacts to agricultural land and uses.
- Permitting authority considers impacts to agricultural land as criteria for permit issuance.
- Agency of Agriculture provides definition and standards for what a “material impact” on farmland is and then certifies that individual projects will not “materially affect” farmland.
- Solar arrays sited on agricultural land must comply with specific performance standards.
- Professional engineer certifies that projects comply with specific performance standards.

3. Require decommissioning plans for arrays on agricultural land and decommissioning bonds for commercial-scale projects.

Solar arrays are usually coupled with long-term contracts for the purchase of the solar energy for periods of ten to twenty-five years. Decommissioning requirements are used to ensure that the solar array infrastructure is removed from the land at the end of the energy contract, or other set time period, and that the land can be returned to agricultural use. States integrate decommissioning requirements into site review processes in a variety of ways:

- The applicant must include or describe a decommissioning plan in a permit application.
- The applicant must show by “substantial evidence” that all structures and materials will be removed upon decommissioning. Ensure soils will be capable of agricultural production.
- Require decommissioning surety bonds or another form of insurance to secure all or a portion of decommissioning costs required at lease conclusion.

4. Provide statutory protection for the status of underlying agricultural land when used for solar development.

Contracts for solar energy compensation are often designed to last ten to twenty-five years. While land may be clearly zoned or otherwise protected as farmland at the time solar arrays are installed, there are few guarantees that farmland will remain zoned or protected as farmland after solar array decommissioning. State laws can clarify the status of underlying land, protecting agricultural land regardless of its use as a site for energy generation. States can:

- Prevent subsequent redistricting of land when redistricted for energy development.
- Protect farmland classification if solar array impacts limited acreage.
- Protect farmland classification if solar array is designed for dual use.

- Protect farmland classification regardless of its use for energy generation.
- Require land be returned to agriculture upon decommissioning.

5. Establish approval processes based on solar array size, location, and design with expedited permitting for small or structure-mounted projects and increased oversight of larger-scale arrays.

Policymakers should attempt to eliminate unnecessary or redundant reviews and inspections, reduce wait times and permit fees, and establish escalating levels of review based on project characteristics like solar array size, design, and location. States can take the lead in streamlining permitting processes and should develop standard technical and procedural requirements with checklists for permit applications and clear guidelines for permit review and approval. For example, states can:

- Develop a simple application form and approval process for small and structure-mounted solar arrays.
- Reduce or cap application fees for small and structure-mounted arrays and increase permit fees according to the administrative burden associated with permit review.
- Develop expedited review processes with reduced criteria and evidentiary requirements for small and structure-mounted solar arrays.
- Create a state-wide solar permit for implementation by municipal siting authorities.
- Limit additional oversight and permit review criteria to larger solar arrays.

6. Establish a Special Review Process for Agrivoltaics

Policymakers should ensure that permitting authorities include regulators with expertise about the integration of solar development with agricultural uses and should collaborative with agencies and entities that already preside over agricultural land management. Permitting authorities can create a specialized review and approval process for agrivoltaic solar arrays, as they do not present the same threat of land use conversion as traditional solar development and are instead likely to improve farm viability.

7. Assess a land conservation fee per acre farmland developed, for increased farmland conservation funding.

Understanding that in many states, achievement of climate and clean energy goals will require solar development on some farmland, policymakers should consider a per-acre land conservation fee for solar arrays located on farmland that can be set aside for farmland conservation.

8. Consider Digital Tools to Improve Permitting Efficiency

States are beginning to use web-based tools to simplify and improve the solar permitting process. For example, forms and applications for solar development can be made available for public download and review. State and local permitting authorities should be encouraged to create simple regulatory guides that describe the process and requirements applied to different solar installations, including those located on agricultural land. Mapping land use considerations using GIS technology allows the layering of detailed information about every land parcel. Mapped characteristics might include the location of energy transmission and distribution infrastructure, electric substations, prime agricultural soils, farmland, forestland, wetlands, endangered species habitat, and other protected lands and natural resources. While online permitting is not widely available at either the state or local level, it presents an opportunity to expedite small or residential solar arrays and could facilitate a wide variety of permitting processes. The availability of online permitting for low-impact projects could also free up regulatory oversight for larger projects and those that may negatively impact agricultural land and natural resources.

V. COMPENSATION FOR SOLAR ENERGY

Net metering and other energy compensation programs that offer a special rate for energy from renewable sources can be used to incentivize smart land use, including smaller-scale arrays, those located on preferred sites, those serving priority populations or industry sectors, and agrivoltaic or dual-use arrays designed to work with agriculture. Well-designed compensation rules can minimize the negative impacts of solar development and maximize the value for all stakeholders, including utilities, solar installation owners, and other ratepayers.

POLICY STRATEGIES

1. Create solar rate incentives that specifically include agricultural customers.

States should ensure agricultural customers are not precluded from participation, which may require creation of a special category within energy compensation or incentives for those customers.

2. Allow agricultural net metering customers to aggregate meters.

States should designate by law that the consumption and generation of multiple agricultural electric meters associated with the same farm business may be aggregated into a single customer account. This allows farms to offset more electricity consumption with solar energy generation. Further, when eligible project capacity size is determined by the average annual electric load of the customer, this calculation should use an average from aggregated meters associated with the farm business to more accurately represent a farm's electricity needs, rather than forcing a farm customer to choose a single meter.

3. Establish net metering and community solar, or group net metering programs to fairly compensate residential and small-scale solar development and provide for group or virtual net metering for agricultural customers.

Net metering and community solar or group net metering policies accelerate residential and smaller-scale solar development. Lawmakers should ensure that agricultural customers can participate in community solar or virtual net metering so that farmers can benefit from solar energy sited remotely rather than sited on productive agricultural land.

4. Establish rate eligibility requirements based on project size, location, and/or design.

Lawmakers should consider establishing different eligibility requirements and different compensation or incentive levels for small and large-scale projects and those sited on "preferred sites." Lawmakers should consider the following policy options:

- Set aside a portion of total program capacity for residential-scale arrays and those sited on structures or preferred sites, and/or exempt these arrays from program capacity caps.
- Establish energy compensation programs that are available to residential and small-scale solar projects, community or shared solar projects, and specifically available to agricultural customers.
- Increase eligible project capacity limits for agricultural customers to accommodate the farm's electric load.
- Consider separate tariffs and energy compensation rules for small and large-scale solar arrays.
- Differentiate program eligibility for projects located on preferred site-types.
- Where possible, streamline and combine the project permitting and siting approval process with the energy compensation program application and enrollment process.

5. Adjust rates based on project size, location, or design.

Lawmakers should consider varying the compensation offered to different solar generators based on project characteristics. It is important to understand the underlying costs and benefits of different project characteristics in designing these programs and policies. Lawmakers should consider the following policy options:

- Establish different solar compensation rates for small and large-scale projects.
- Establish special rates based on project location or site-type.
- Use rate adders and subtractors based on system size, location, and design within net metering programs, feed-in tariffs, and other per-kilowatt-hour compensation programs.
- Create a rate incentive specifically for agrivoltaic or dual use solar arrays.
- Create rate incentives for solar project characteristics like solar tracker hardware, energy storage components, or maintenance of pollinator habitat.

6. Use digital tools to facilitate tariff implementation and consumer understanding.

As state rules for solar energy compensation take into account more and more factors that may affect the ultimate per-kilowatt-hour rate, tariff formulas for rate calculation become increasingly complicated. To support transparency and improve stakeholder understanding of compensation programs, lawmakers should encourage or require the use of digital tools and explanatory resources.

VI. INTERCONNECTION

Utility interconnection refers to the process of connecting a new solar array to the existing electric grid. Grid interconnection rules are essential for ensuring electric reliability but can be costly and complicated. Depending on whether a new solar array connects to the transmission grid or the distribution grid, federal, regional, state, and utility-specific rules and fees may apply to the interconnection process. The interconnection of solar arrays remains a significant regulatory issue because of the technical and procedural requirements needed to safely, reliably, and efficiently interconnect a new solar array.

POLICY STRATEGIES

1. Specify time limits for interconnection application review.

Effective interconnection rules should specify both the procedural steps that must be taken and also the amount of time allowed for each phase of the process. Timing can be critical to project development success, and delays are likely to arise if procedures do not include specific, reasonable time limits for each step.

2. Expedite applications for smaller-scale solar arrays or those sited alongside an appropriately sized electric load.

States should create simple, transparent interconnection applications for small generators and those serving on-site electric load. If possible, the interconnection application should be combined with a simplified interconnection agreement.

3. Limit fees and reduce interconnection costs for smaller-scale solar arrays or those sited alongside an appropriately sized electric load.

States should limit application and processing fees for interconnection of smaller-scale projects and those serving on-site electric load. This includes limiting overly burdensome administrative requirements, such as obtaining signatures from local code officials, unless necessary.

4. Consider Use of a Cost Envelope.

A cost envelope limits a developer's cost responsibility for upgrades (or modifications) to a certain threshold above a utility's estimate. Typically, costs are estimated before a developer signs an interconnection agreement, and these estimates generally are made based on a preliminary assessment of the project without a site visit, which means they frequently vary widely in the final charge.

VII. CURRENT USE TAXATION

Agricultural land enrolled in beneficial taxation programs are often barred from installing solar arrays. States are starting to change their policies to allow limited solar development on enrolled land to avoid farmers and agricultural landowners facing penalties for using renewable energy on-farm. These rules might clearly establish that solar development is not permitted on enrolled land or may allow limited solar development based on the system's size, land use footprint, the percentage of energy used by the farm, or on a case-by-case basis.

POLICY STRATEGIES

1. Solar Arrays Limited on Enrolled Land.

Some states refuse to accept solar energy generation as an agricultural use on land enrolled in current use taxation programs. In these states, installation of a solar generating facility on land enrolled in the current use program would result in a revocation of current use enrollment and assessment of land use change penalties. Policymakers may view solar development as an improper use of agricultural land receiving current use benefits but should be clear in law and regulation if solar development is prohibited under program rules.

2. Solar Arrays Limited on Quality Soils

States can limit prohibitions on solar development to enrolled land designated as "prime farmland," or another category of quality agricultural soils. This helps to preserve high-quality soils and productive farmland while leaving room for solar development on enrolled land consisting of marginal farmland and poorer-quality soils.

3. Solar Arrays may be Sited on a Case-by-Case Basis.

Some states allow landowners to show that the solar array is being used for agricultural purposes on a case-by-case basis. If the solar array does not violate program rules, the tax assessor will allow the hosting land to retain its tax benefits. This policy is likely the most difficult to implement of all policy options, and leads to confusion among participants and regulators alike.

4. Solar Arrays of Limited Size may be Sited on Enrolled Land.

Some states allow landowners to site solar arrays of limited capacity on enrolled land, as small-scale arrays are likely to have a minimal impact on agricultural use.

5. Solar Arrays Serving the Farm may be Sited on Enrolled Land.

Some states allow landowners to site solar arrays on enrolled farmland when the array is designed to meet the farm's on-site electricity load.

6. Agrivoltaic or Dual Use Solar Arrays may be Sited on Enrolled Land

Some states only allow agrivoltaic or dual use solar arrays to be sited on enrolled land without triggering tax penalties. Such projects are valued as they support farm viability, maintain agricultural land uses, and provide farmers with a dual income stream from renewable energy generation.

7. Solar Defers or Cancels Current Use Enrollment without or with a reduced Tax Penalty

Some states have established provisions for the deferment or cancellation of current use enrollment, in lieu of penalties, to accommodate solar development. Penalties could be waived either for agrivoltaic or dual use arrays only, or for a wider variety of solar arrays.

VIII. OTHER TAX CONSIDERATIONS

Many jurisdictions incentivize solar development by providing tax credits or abatements to sales and use taxes or personal property taxes. These policies can be used to incentivize preferred solar arrays.

Property tax is assessed depending on solar array characteristics

For example, property taxes could be abated if a solar array has certain characteristics, for instance is under a certain capacity, is enrolled in a net metering program, is located on a "preferred site," serves priority populations or industry sectors or is sited alongside and sized to meet an electric load.

For additional explanation of policy recommendations and examples of statutory language implementing policy strategies, please visit the Vermont Law School Farm and Energy Initiative website, https://farmandenergyinitiative.org/projects/farmland-solar-policy/