



Recommendation: Town of Bedford Solar Siting Framework February 17, 2021

Background

Proposals to develop large-scale (>12k) ground mount solar arrays are currently being explored by property owners in the Town of Bedford (at West Patent Elementary School and Baldwin Road). These proposals have generated a wide range of community viewpoints about the advantages and disadvantages of developing ground mount solar in our community. Bedford 2030 believes that a framework for evaluating these and future solar proposals must be put in place for our community to make informed decisions. To that end, this document reviews key issues relevant to solar siting in the Town of Bedford, in particular our community's dual climate action goals to reduce greenhouse gas emissions and preserve natural resources, and proposes a path forward for creating a Solar Framework.

Introduction

As solar electricity becomes a viable source of clean, low cost electricity, local governments similar to the Town of Bedford are developing frameworks for smart solar siting to combat climate change while reinforcing the conservation of our natural resources and supporting the land's potential for carbon sequestration. The Town of Bedford does not currently have such a framework.

The Bedford Solar Siting Framework (the "Solar Framework") would consider: 1) the Town's new 2030 Climate Action Plan ([CAP2030](#)) adopted in June 2020; 2) its goal to reduce community-wide greenhouse gas emissions 80% by 2030; and 3) the broader issue of appropriate and considered land development as outlined in the [Comprehensive Plan](#). The Solar Framework would also acknowledge Bedford's role in addressing New York State's new greenhouse gas reduction and renewable energy generation goals.

CAP2030 includes two priority strategies for reducing greenhouse gases in our community that are relevant for evaluating solar projects:

- 1) increase locally generated renewable energy; and
- 2) sequester carbon via the natural environment (trees, plants and soil).

Bedford 2030 recommends that the Town institute a transparent and collaborative process for local solar planning, siting and assessment. To achieve this goal, Bedford 2030 would facilitate a working group that includes representatives from the Planning Department, Planning Board, Conservation Board, Town Board, Bedford 2030 and other select subject matter experts to develop a Solar Framework for evaluating projects. Ideally, this will take the form of a scorecard to assess project characteristics, with specific criteria that can be used to initially qualify projects as well as resources for accessing information regarding proposed solar

sites (e.g. land type/quality) that will inform the evaluation process. Bedford 2030 also recommends that the Solar Framework include mitigation strategies that can serve to compensate for lost ecosystem services, if any, that are expected to result from any large scale solar project.

Once the Solar Framework for evaluating large-scale (>12k) solar projects is completed, Bedford 2030 recommends that the Town of Bedford adopt a solar zoning ordinance that incorporates the agreed upon Solar Framework with the understanding that the ordinance itself does mean projects would be automatically approved.

Overriding Principles: We believe that it is essential to take multiple factors into account in discussing the Solar Framework and that the following statements ground the analysis:

- We will need to **support both renewable energy as well as forest retention and planting** to fulfill the Paris Agreement goal to limit global warming to below a 1.5 degree centigrade rise in temperature.
- **Solar projects are an important component to addressing the growing electricity needs of our community, state and country** while replacing harmful fossil fuel-generated electricity with renewable energy sources.
- **Trees, plants, land and soil have significant value in reducing GHG emissions** due to their ability to store and sequester carbon.
- **Trees, plants, land and soil provide valuable ecosystem services** related to biodiversity, wildlife habitat, food for humans and other species, flood and erosion control, fresh water and water purification.
- **“Municipal planning is a deeply rooted American tradition and is of critical concern today in Bedford** as the challenges of needed housing, prudent land use, and environmental protection are faced.” (Source: Town of Bedford, NY Planning Statement)
- There are **health, economic and justice benefits** associated with local solar projects as well as **resiliency benefits** that could allow our community to withstand severe storms or other emergency situations.
- **Diverse opportunities for solar projects** necessitate an evaluation framework that can differentiate them based on sound criteria, enabling some to be approved while others declined.
- **Mitigation strategies** should be considered.
- Land development of any kind must be evaluated and approved/disapproved using a thoughtful framework that includes input from all stakeholders and consistent criteria.

Why Solar and Why Here?

New York State has set a goal of generating 70% of electricity in the grid from renewable sources by 2030. From solar sources, this requires adding 3.6GW in the next nine years.

An analysis of the Hudson Valley's transition to renewable energy (Scenic Hudson 2019) concluded that, "to reach the state energy goals, rooftop, community and grid scale solar must be constructed in the Hudson Valley." For the Town of Bedford to actively participate, we need to evaluate potential sites in our community that could contribute to the state's clean energy goals.

Along with transitioning to a clean electric grid, increased renewable energy is needed to electrify our buildings and transportation. To address the climate crisis in NYS and in our community, we need to transition our building stock and transportation away from the fuels that are warming the planet and onto clean electric-powered solutions (e.g. heat pumps, EVs) that use non-fossil fuel generated electricity to power them. The transition to these fossil free solutions will create increased demand for renewable energy. With the closing of Indian Point this demand will need to be met from new sources including solar.

Along with supporting a cleaner NYS electric grid and bringing associated climate and health benefits, locally generated renewable energy will bring resiliency and economic benefits to our community, providing further reason to evaluate potential for solar in Bedford.

Increased reliance on locally generated renewable energy improves **resiliency** when paired with batteries that can be disengaged from the grid. Recent research into the value of solar identifies battery storage as an essential component of systems in order to provide both backup power in outages and to provide real economic value in all other times.

Locally generated renewable energy provides **economic benefits** of decreased utility costs and revenue to local landowners including the town, schools, residential and commercial building owners. Locally generated renewable energy also lowers the utility demand cost (i.e. the expense to build out more grid capacity to cover the highest use day of the year) thereby lowering costs for all customers. Local solar projects create jobs, thereby providing economic and justice benefits.

Locally generated renewable energy reduces the distance that energy must travel and thereby mitigates power transmission loss.

Solar Development in the Hudson Valley - Size Matters: The size, type, use and location of proposed solar projects varies widely, and is heavily influenced by several factors, including permitting and electric grid interconnection requirements, energy prices, and state incentive programs. In the New York solar energy market, these factors translate into several common size categories:

- **Small rooftop or ground-mount systems** up to 25 kilowatts (kW) - in Bedford there are several residential rooftop and ground-mount systems in this category
- **Projects up to 750 kW that supply non-residential or commercial/industrial users** - local examples in this category include Diamond Properties, Town of Bedford Water Filtration Plant rooftop system, Bedford Police Station carport system; Atlantic Westchester rooftop system, among others
- **Projects up to 5 megawatts (MW) that are often community solar projects** - local examples in this category are the ground mount array at Oakwood Cemetery in Mt. Kisco and the ground mount array at Mt Kisco landfill.
- **Very large ground mount projects up to 20 MW** - The Halsey Valley Community Solar farm in Tioga County, NY, serving Bedford NYSEG customers (via Sustainable Westchester) is an example in this category
- **Projects 25MW and above, which must be approved by the State**

The typical size of residential rooftop solar in New York is 8 kW, which requires a little more than 500 square feet of roof area.

For ground mount solar projects, 1MW (1000kW) requires approximately 5-10 acres of land, and can provide enough energy for 160 homes.

(excerpted from The Scenic Hudson Solar Mapping Tool)

What's happening with solar in the Town of Bedford?

Solar energy is currently being produced from several local arrays in The Town of Bedford. This includes rooftop and ground mounted solar on residential and commercial properties, rooftop solar on the Town's Water Filtration Plant, and canopy solar at the Bedford Police Station.

In 2014 the Town adopted the New York State Unified Solar Permitting Law allowing small projects of 12 kW or less to be approved for building and electrical permitting. Solar energy collectors that produce on-site energy use in a residential or commercial zone are considered a permitted accessory use under the Town Zoning law.

The Town of Bedford does not currently have an ordinance to approve a commercial ground mounted solar energy plant either as a principal use or as a special use in residential zones nor in commercial zones.

If the Town government were to undertake a solar project on Town property, it need not apply for a permit or submit a plan for site review and would not be prohibited from developing ground mounted solar. However, the Town needs to comply with state and federal laws and regulations when it comes to environmental review and wetlands regulations, among other things.

The Town is currently working with the New York State Power Authority (NYPA) to assess the potential for solar at several Town properties.

Bedford 2030 is currently working with NYS Assemblyman, Chris Burdick, to explore with the New York State Department of Corrections the potential for solar at the Taconic and Bedford Hills facilities.

What about carport solar?

While carport (canopy) solar is environmentally friendly and could provide community scale solar for a sufficient size project, it presents economic challenges, particularly in NYSEG geography.

Carports are the most expensive type of solar to install. Developers report that the added cost of steel, footings (caissons), the need to dig a foundation, construction, re-paving, disruption to parking, etc. increase project expenses by 30-50%.

In the ConEd zone where energy is more expensive and solar is difficult to site, carport solar can be more economically viable. There are currently NYS incentives in the ConEd zone that reduce the base cost for carport solar from approximately 40-cents per watt to 24 cents per watt (vs. an approximate < 7 cents a watt for rooftop and < 3 cents for ground mount solar). These incentives do not exist in the NYSEG area, (nor in the rest of the state). Therefore it will be challenging for carport solar to generate enough income for the property owner to make leasing it worthwhile in the majority of our community where NYSEG is the utility.

The solar developer working on a 4.7 megawatt carport project at the Croton-Harmon train station reviewed the potential for carport solar at the Bedford commuter lots and responded as follows, "Unfortunately the projects do not work for community solar at this time. This is primarily due to the lower incentives available in NYSEG territory. We reviewed each of the locations, put together an indicative design and energy production forecasts, and then ran each site through our model. The economics were such that the landlord (site owner) would need to pay *us* an annual fee to put solar on the site."

CONSIDERATIONS FOR OUR SOLAR FRAMEWORK:

Our Solar Framework needs to include consideration for **the preservation of natural resources**.

In evaluating a solar site, we need to understand the **value of the ecosystem services that the land provides**. Land can provide a range of benefits from cultural (beauty, tourism, recreation), to supporting biodiverse systems and wildlife habitat, food for humans and other species, flood and erosion control, fresh water and water purification and carbon storage, all of which should be taken into consideration when determining the appropriateness of a solar site. Additionally, the decision making framework needs to include **how any development and ongoing operation would impact these ecosystem services**.

Additional considerations include:

Looking for major factors -- like specific land use characteristics in the area surrounding a proposed site (e.g. a wildlife corridor that is already cut off by a highway) -- that differentiate potential sites, so not all sites are treated equally

Comparing all of this to the **carbon emissions that are being saved by having renewable energy that is being generated**

Evaluation of other benefits -- resiliency, health, economic

Incorporation of **mitigation strategies** that can offset negative impacts of the solar project

Track **new developments in renewable energy and other technologies** and how they might impact solar siting in Bedford

Solar siting methodology

We suggest three categories that can be used for the evaluation of solar sites: 1) **Yes**; this is the type of solar we want -- prioritize solar projects at these sites; 2) **No**; we will restrict building solar on this type of land or property; and 3) **Maybe**; need more information and evaluation.

It will be the role of the community working group to ultimately recommend and define what types of sites or conditions fall into these three categories. However, based on existing zoning, state and federal regulations and other factors, we can begin to imagine the kinds of sites that would fit into the first two categories:

Yes: Roof Mounted systems; Solar Parking canopies; Brownfield, landfill, other "low value land"; Previously developed, degraded, marginal land; non-greenfield lands with limited existing trees; among others

No: Wetlands, wetland buffers, habitat corridors, solar that fragments contiguous habitat and/or forest land, Disruptions to the ability of the land to provide ecosystem services (clean water, wildlife habitat, erosion, carbon sequestration); among others

An essential part of the Solar Framework will be a methodology for evaluation of sites that fall into the third "**Maybe**" category.

Each possible solar site in the Maybe category is likely to have unique natural resource attributes and will need to be individually assessed based on the ecosystem services the site provides. These services should be weighed against the impact of solar development. This assessment, when included in the community framework, should account for evolving science such as new research on ecosystem services and Carbon measurement. Currently the scientific understanding of the ability of land to absorb carbon is rapidly evolving and no single tool currently exists to establish carbon sequestration potential.

However, Scenic Hudson has developed an interactive tool that combines map information with education and guidance to help Hudson Valley communities find the best places to locate solar energy. The [Scenic Hudson Solar Mapping Tool](#) allows communities to combine multiple layers of map data with local knowledge and community values to identify the best areas for solar development.

In partnership with several local organizations, Bedford 2030 is compiling a natural resource inventory for the Town of Bedford. This compiled resource will provide important community information and data that can inform land evaluation.

Bedford 2030 recommends that the working group determine how the Scenic Hudson Solar Mapping Tool can be applied for site evaluation in the Town of Bedford; whether it is appropriate as a key component of our local assessment methodology and whether there are additional data points/measures we need to include/overlay.

Other considerations:

Use of Land for any kind of local development: It is important that the natural resource preservation land planning criteria as well as the evaluation standards adopted for solar siting apply to all types of proposed land development in the Town of Bedford.

Mitigation strategies: The Solar Framework should include a viewpoint on land mitigation strategies (e.g. tree planting, land restoration projects, pollinator friendly solar, among others) that would offset the negative impact of solar and provide benefits to our community and its inventory of natural resources.

Action Plan

Given the urgency of the climate crisis and the need for a solar siting framework in Bedford, Bedford 2030 recommends the immediate formation of a working group charged to take on this task in a thoughtful, inclusive, and expedient manner.

Proposed steps and timing:

- Form community working group...1-2 weeks
- Working group meets multiple times and drafts solar siting framework...6-8 weeks
- Review (including public comments), revisions and adoption of framework...4-6 weeks
- Initiate ordinance process...timing TBD

Additional notes on Solar Siting:

Importance of Forested Areas and Trees: Scenic Hudson, in a newly released Solar Siting Tool kit, stated: “Forested areas and trees collect carbon and provide water management, cooling and climate benefits. Renewable energy facilities should not be sited or constructed in a manner that would significantly impact the land’s carbon-storage benefits or ability to provide climate change adaptation and resilience. An environmental review of proposed large-scale renewable energy projects that will impact forested areas should include an analysis comparing the facility’s GHG emissions-reduction benefits with the lost carbon-storage potential—to ensure that climate change benefits outweigh this loss.

Forested areas, especially contiguous forests, also provide habitat. Renewable energy projects should be designed and sited to avoid clear-cutting large acreages of woodland or removing significant amounts of vegetation, resulting in habitat fragmentation. Perimeter fencing should be designed to minimize impacts to wildlife. In addition, renewable energy facilities should be designed and constructed in a manner that protects the functions of wetlands and other water resources, and that avoids or minimizes any impacts to them from associated activities such as access roads and maintenance operations.”

Understanding the prevalence of ground mount solar: According to NYSERDA, “ground mount solar is the dominant type of nonresidential solar installation in New York State, offering a number of key advantages over alternative installation types. These projects may be installed in nearly any direction or location, at varying angles as to be positioned for optimal energy production. Whereas opportunities for rooftop installations may be limited due to the amount of available roof space, ground mount systems do not face this limitation. Additionally, for some rooftop installations, the angle of the panels is limited by the slope of the roof; this is a non-issue for ground mount projects, which can be angled for optimal performance.”