Good morning and thank you for the invitation to participate in today's hearing. My name is Nan Stolzenburg, and I am owner of, and Principal Planner for the consulting firm, Community Planning & Environmental Associates (CP&EA) located near Albany, NY. I have provided land use and environmental planning consulting to small and rural communities throughout New York State for over 28 years. I am certified as a Planner (AICP) and an Environmental Planner (CEP) by the American Planning Association.

My work is focused exclusively on the planning needs of small and rural communities, and we have been principal consultants on numerous county-level and town-level agricultural and farmland protection planning efforts across the State. I have also worked with many rural communities on issues related to renewable energy land uses. My comments stem from my experiences from being retained by communities specifically to address renewable energy land uses at the local level through Town comprehensive plans, open space plans, natural resource inventories, and local land use regulations. Also, my personal experience as a member of a dairy farm family and a resident of a very rural area, offers me an additional, first-hand experience to share.

I am honored to speak to you today. I feel it is particularly important to convey to you one aspect of renewable energy development and it is an issue that challenges movement towards a more positive renewable energy economy. That issue is the siting of renewable energy facilities, specifically solar facilities, and the local perspective on such facilities. As my experiences attest, this topic needs much more attention. This topic is not only relevant to the broader renewable economy, but to agriculture. As the industry moves towards large-scale solar development, rural communities and their local policies can and do affect farmers needs or desires to use their farmlands for renewable energy development. Creative opportunities to promote renewable energy, multi-use farming, and build community exist, but are generally not taken advantage of. Solar developers economic decisions are driving the system, which typically leads to friction with rural host communities.

My perspective is shaped from experiences in New York. I recognize that the situation seen here may not be the case in all states. The key point I wish to convey is that a general lack of planning, coordination, information sharing, community involvement, and forethought related to siting of renewable facilities in rural areas has created barriers to a broader renewable economy and many missed opportunities. Lack of proactive planning for siting and site layout of these facilities coupled with the solar industry solely at the helm of site selection has had adverse impacts. These include the removal of valuable farmland and forestland, adverse impacts to rural character - one of the largest economic assets a rural community has, and promotion of negative attitudes towards renewable energy. The lack of tangible benefits received by host communities, taxation issues, and growing resentment that these facilities are imposed on rural communities to benefit urban communities are also on the minds of many rural residents and local officials.

There certainly is a recognition in many rural communities that we need to move assertively to develop renewable energy resources to meet the challenges posed by climate change. But our efforts to meet that challenge should not diminish agricultural production, or adversely impact our farm communities, or our environment. I do not accept the premise that our renewable energy economy must come no matter its cost to our communities and environment. As a professional land use planner, I know there are indeed steps that can and should be taken to address this.

Solar facilities (as well as wind and biofuel) are often the largest built, non-farming feature in a rural community's landscape. These are major land uses built at a scale and intensity in stark contrast to other uses. Facilities are getting larger, not smaller. The current acceleration to

develop renewables revolves around economics and economies of scale, and thus site selection gives little thought to the very features most highly valued in rural communities. Universally, those highly valued features revolve around rural character, agriculture, open spaces, and clean environments. At its core, the current direction focusing on large-scale renewables is seen as inconsistent with what these communities are all about. A failure to address this is a barrier to an expanded renewable economy.

These barriers often result in prohibitive local regulations, more rural/urban divisions and lost opportunities for farmers. Not surprisingly, new, large-scale renewable energy facilities fosters 'NIMBY' or "Not In My Backyard" attitudes, and thus stymies public support.

Rural communities are generally unprepared to address large-scale renewable facilities. They often have no staff support, rely on volunteer planning boards that often have little information about options they could incorporate into an application to promote best management and siting practices. They are not skilled in the environmental review of such facilities and lack resources and tools to evaluate and incorporate renewable energy into their local land use decision making.. We need to empower our communities to overcome these weaknesses.

More planning is needed to guide solar facility siting. Few states and even fewer local municipalities have actually gone through a concerted planning process to identify locations that would be acceptable and suitable for renewable facilities.

Good planning would involve identifying both natural resources and critical local features that need to be protected and identifying locations that have the right conditions for the renewable facility, such as proximity to transmission lines. Through use of Geographic Information System technology, these criteria for siting solar and other renewables can be easily applied and mapped. Communities could collectively make choices about where they can accept such facilities. Local policies can be fashioned to facilitate this. Such planning would give both renewable energy developers and local communities guidance as to where to focus efforts and this will lead to more efficient and better approval outcomes. It would eliminate the perspective that renewable facilities are being 'foisted' on them that benefit others.

There are some examples of this type of planning: For example, in Kentucky, a "solar siting potential" map has been developed that can be used to help local communities plan for, instead of simply react to, renewable facilities. In other places, land trusts and environmental organizations have stepped in to fill that same planning need with siting guidelines and/or mapping tools. For instance, the Maine Farmland Trust, Scenic Hudson (in NY at https://www.scenichudson.org/our-work/climate/renewable-energy/welcome-to-scenic-hudsons-solar-mapping-tool/), the American Farmland Trust, and the Chesapeake Conservancy in Maryland have all developed guidelines or GIS-based planning tools to help foster good facility siting and planning. Also, many solar developers publish their own siting guidelines (Such as the Solar Energy Industries Association, or SEIA). The US Department of Energy, Solar Energy Technology Office (SETO https://www.energy.gov/eere/solar/solar-energy-technologies-office) has been conducting research into best management practices for solar siting and has many good resources.

All these are good tools with good information that could be helpful. A significant issue is that these tools usually do not trickle down to the local level where the actual renewable development is taking place. That reflects a lack of coordination, communication, and regional planning to address these issues.

In order to both avoid and mitigate negative impacts and to build acceptance, planning processes need to take place at the local level to involve local officials and community members. As stated in a 2017 report *Accelerating Large-Scale Wind and Solar Energy in New York: Principals and Recommendations* (https://www.nature.org/content/dam/tnc/nature/en/documents/accelerating-large-scale-wind-and-solar-energy-in-new-york.pdf) "communities need tools and resources, such as comprehensive planning and zoning ordinances, and expertise in how to use them, to be effective partners in the renewables development process." And that is simply not happening. As a result, the positive opportunities associated with renewables are greatly diminished.

In New York State at least, a variety of siting guidelines have been produced by state agencies and organizations, but there remains little coordinated, state-wide forethought into considering impacts to farmland, food systems, farmers & farm communities. While multiple siting guidelines exist and offer recommendations, there are still no special protection of prime agricultural soils and in many cases, forested areas. Clearcutting of large swaths of forest land, which is happening when solar is developed, is especially difficult for rural communities to accept.

Development of solar facilities are often at cross purposes to other stated public goals. For instance, prime farmland soils are often lost to agricultural production when it is more profitable to farm the sun than food. Farmers that rely on rented farmland for their operations have lost access to those fields which have been converted to solar use. This loss can disrupt farm viability. When rented farmland is slated for solar development, the farmer loses ability to implement whole-farm nutrient management plans for example. Loss of leased farmlands decreases the number of farms, which will also affect farm suppliers, services, and the regional economy. In our current farm economy, it is a disturbing trend that it is more economically beneficial for farmers to host solar facilities than farm that land.

Right now, because developers propose the sites and government regulators only react to proposals, it is site developers that are making the choices about where these facilities get located. Flat, accessible land is, unfortunately, desirable for both farming and renewable energy and so this friction often enters the review process from the very beginning.

Local communities, often referred to as 'host communities' more often than not in my experience have no say in whether they want to host these facilities, and do not often feel like they receive any benefits. Resentment that builds due to having to accept adverse impacts to their landscape, environment and community with no local, tangible benefits contribute to the rural/urban divide.

This absence of planning and proactive involvement of local communities often places significant barriers to renewable energy development. Legitimate concerns should be taken into consideration in the renewable economy. Planning that involves local officials, farmers and residents is a pressing need that is currently unsupported. I strongly advocate for government to take a greater role in guiding and incentivizing facility siting and providing standard protocols, methods, and expectations. We should be looking across states, and carefully identifying and prioritizing suitable locations that balances smart land use planning that preserve what is important to rural communities and the need to develop renewable energy resources.

Governments should consider creating a potential site hierarchy system, with incentives and a faster and easier approval process for sites deemed best suited for such facilities. There should be policies and requirements in place that emphasize prioritizing lands that are distressed and no longer useful for other purposes. Suburban and urban locations should receive a lot more attention so that development of rooftop solar and building integrated solar for residential and commercial buildings is an equal part of the solution. At the same time, prime agricultural soils

and other important agricultural resources should be protected during the siting and application review process. This is especially important in the northeastern United States which has land resources and water to support farming in ways western and mid-western communities do not.

Government should not shy away from local community input. Instead, use community input in a planning process to help inform the selection of potential sites so that local communities have a voice in that selection and simply don't have sites imposed on them by developers and regulators.

Our policies should consider encouraging more smaller solar energy facilities that distribute the power generated locally. Communities in general view these facilities more favorably because they make a difference locally and there are tangible benefits that could outweigh disadvantages. Smaller facilities will likely have smaller footprints and lower impacts to agriculture lands, rural character, and the environment.

Farms and agricultural lands are just as fragile as our environmental resources. The key is to use sensible planning to ensure, that in meeting the challenges of one environmental problem, we don't create new problems and other adverse environmental impacts. Local agriculture and agricultural resources need to be accorded more value in siting decisions, to protect productive agricultural lands and forestlands for our future. The Covid pandemic and its exposure of a broken food system is a sharp demonstration of the community need for a robust supply of local farm products.

There are many but yet mostly untapped opportunities to promote dual use of farms where agricultural activities can take place simultaneously with energy generation. Dual use (often referred to as 'agrivoltaics') can promote use of native grasses and pollinator-friendly plants to provide habitats for butterflies and support bees that farmers rely on. Sheep grazing on solar farms is an excellent opportunity that meshes agricultural opportunities and entrepreneurship with renewables, but is neither required, nor easily accepted by the solar developers (*See Solar and Multiuse Farming, attached*). There is a great need for information, incentives and in some cases requirements, to promote these opportunities for agri-voltaic uses. Should that take place, we must also address lack of markets and processing for sheep and their products. This is an example of ways solar development can provide multiple benefits and provide a way to help farmers use solar as a steady revenue stream.

In light of these challenges, I urge Congress to consider establishing programs and policies that address these problems. These include:

1. Promote local planning that assists local communities in assessing renewable energy capacity in a way that involves local residents in a meaningful way. This includes supporting local planning efforts such as comprehensive planning, natural resource inventories, and open space planning. These plans need to establish methods that allow for renewable energy projects in appropriate areas supported by the community. Financial resources are needed for conducting these basic community planning efforts. These are grassroots efforts that help engage people and promote communication. This will ultimately empower local communities to accept renewables into their economy.

2. Provide assistance in the form of technology and staff to help these communities navigate myriad sources of information. Fund agencies such as Cooperative Extension or others to serve as information clearinghouses to aid rural communities.

3. Promote application by solar developers of best management practices that preserve environmental and especially, scenic resources. These are major barriers and must be addressed.

4. Establish policies that incentivize use of disturbed sites first, as well as rooftop, parking lot, and building-integrated solar facilities in all locations – rural and urban - first instead of green locations. Do not put rural areas in the position of having to supply all renewable energy to urban and suburban areas.

5. Collate existing models developed across the States to identify farmland criteria to steer renewable energy facilities to locations that preserve valuable farmland needed for food production, and require or incentivize application of these criteria.

7. Require or incentivize use of agri-voltaic's in renewable energy siting and involve the farm community early in siting so that the farm community can benefit from renewable facilities.

8. Promote smaller-scaled facilities that are truly 'community facilities' so that renewable energy production has greater benefits locally.

9. Promote use of host community agreements so that affected communities see benefits.

10. Further, address tax issues and support training for those involved in taxation of renewable facilities to enhance effectiveness and fairness of PILOT agreements that are negotiated – again to offer local benefits.

Conclusion:

I urge Congress to establish national policies related to siting of renewable energy facilities and to enhance planning tools and principals when thinking about ways to expand the renewable economy. In so doing, consider the complex and multi-faceted experiences, expectations, and values of rural residents, find ways to promote renewables in a way that recognizes and balances the often-competing community goals and needs, and establish programs, requirements and incentives that positively involve rural communities and residents <u>in</u> the renewable economy rather than imposing it <u>on</u> them.

Solar & Multiuse Farming

Co-locating Utility-scale Solar with Livestock & Pollinators

Solar development and agricultural use can exist not only side-by-side, but increasingly are found together.

- A farmer can add solar to their property and get steady income from a land or rooftop array.
- Solar energy facilities can also collaborate with local farms and bee-keeping organizations to incorporate pollinator friendly plants and bee hives onto their sites.
- Responsible solar development could improve soil health, retain water, nurture native species, produce food, and provide even lower-cost energy to local communities.
- Sheep farmers have opportunities to contract for vegetation management of solar sites and thus increase farm viability

Photo Credit: American Solar Grazing Association

According to a study conducted by Cornell University in 2018[3] and a study from the National Renewable Energy Laboratory in 2016,[4] co-location and solar grazing bring net positive benefits for farmers, in the form of hundreds of dollars per acre each year in additional income, and solar sites, through increased energy production and reduced maintenance expenses.

Benefits to Farmers

Farming is an extremely low-margin, competitive industry. If a farmer can add solar to their property and get steady income from a land or rooftop array, it can enable them to keep their farm.[1] Steady income from solar projects means that farmers are less vulnerable to fluctuations in market prices on their products. Especially for larger solar projects, local government and communities benefit from collected taxes and localized spending.

"Solar grazing" is a method of vegetation control for solar sites that utilizes livestock, primarily sheep.[2] While solar grazing is currently in pilot phases on various sites, it is increasing in popularity. Solar companies can contract with local farmers, resulting in a relationship that is financially beneficial for both farmers and solar developers. Properly installed systems are benign to nearby animals.

---

[1] https://www.renewableenergyworld.com/articles/2016/04/solar-power-more-lucrative-than-crops-at-some-us-farms.html
[2] Various livestock, and sheep in particular, may be sensitive to the preexisting mineral contents of the soil, and proper soil testing should always be done prior to grazing.
[3] Kochendoerfer, N. Hain, L., Thonney, M.L. (2018) The Atkinson Center for a Sustainable Future at Cornell University https://www.solargrazing.org
[4] https://www.nrel.gov/news/features/2019/beneath-solar-panels-the-seeds-of-opportunity-sprout.html

Solar & Multiuse Farming

Solar energy facilities can also collaborate with local farms and bee-keeping organizations to incorporate pollinator friendly plants and bee hives onto their sites. There are many benefits to combining solar facilities with pollinator habitats:[5]

- Using one large solar field or perimeter screening area is akin to planting thousands of backyard pollinator gardens, which ultimately increases the productivity of farmland for miles around the facility.
- Planting native pollinator habitats reduces waste water runoff, and pollinator-friendly vegetation management practices, including minimal use of pesticides, results in more stable bee populations, benefiting farmers in the surrounding area.

Photo Credit: Pine Gate Renewables, North Carolina

Solar Projects Can Improve Biodiversity

Solar farms can support a greater diversity of plants as well as greater numbers of butterflies and bees, particularly under management which focuses on optimizing biodiversity when compared to equivalent agricultural land. This increase in plant and invertebrate availability may lead to more opportunities for foraging birds in terms of invertebrate prey and seed availability.[6] When joint solar and vegetation designs are developed together, the benefits achieved can be maximized.[7]

Photo: SouthHill Community Energy

Solar Installations Could Be Win-Win-Win for Food, Water, and Renewable Energy

Responsible solar development could improve soil health, retain water, nurture native species, produce food, and provide even lower-cost energy to local communities. The Department of Energy's (DOE) Innovative Site Preparation and Impact Reductions on the Environment (InSPIRE) project brings together researchers from DOE's National Renewable Energy Laboratory (NREL), Argonne National Laboratory, universities, local governments, environmental and clean energy groups, and industry partners to better understand how to maximize local benefits.[8]

At several InSPIRE sites, local beekeepers and university and national laboratory researchers are tracking their bees' visits to the pollinator-friendly vegetation under the solar panels. The goal is to determine how vegetation at solar sites can benefit insect populations and to understand the extent to which pollinator-friendly solar installations can boost crop yields at surrounding farms.

---

[5] https://www.greenbiz.com/article/solar-farms-could-make-fertile-habitats-bees-and-butterflies
[6] Montag, H., Parker, G., Clarkson, T. (April 2016). The Effects of Solar Farms on Local Biodiversity: A Comparative Study.
[7] Macknick, J., NREL (June 2016) Overview of opportunities for co-location of agriculture and solar PV
[8] https://www.nrel.gov/news/features/2019/beneath-solar-panels-the-seeds-of-opportunity-sprout.html and https://openei.org/wiki/InSPIRE