

January 19, 2024

Dear USDA and DOE Colleagues:

I am thrilled that USDA and DOE are now jointly considering the impacts that large-scale renewable energy development will have on rural America. I have spent most of the last decade studying the impacts—both positive and negative—of utility-scale wind and solar projects in the Midwest while also developing tools and programming to help empower rural communities and landowners to thrive as a result of the energy transition. I have been fortunate that this work has been supported largely by DOE funds, whether directly from EERE research grants or indirectly through SEP funds to Michigan’s Energy Office. The communities in which I work, though, often have more connections with USDA, and especially recently—in light of a surge of large-scale solar development—have been asking increasingly pointed questions about what impact this surge will have on agriculture and on rural livelihoods more generally. Collaboration between the two agencies with complementary expertise on energy development and rural economies will be vital to answering these questions and to develop solutions that jointly advance both rural prosperity and an energy transition.

I do believe—and the research supports—that renewable energy development is one of the biggest economic opportunities that rural communities have seen in decades. Though now most see me as a scholar of energy, my PhD is actually in farmland preservation; my dissertation provided some of the first evidence that [wind energy could be a farmland preservation tool](#). The income from wind leases is allowing farmers to shore up their succession plans and diversify their revenue streams, and leaseholders are pumping that money back into the local economy. But from [subsequent research](#) I also know that wind turbines are not universally loved, particularly by non-farming neighbors, and that [solar plays out differently](#) in its relationship to farmland preservation.

While there are countless stories of [success](#) where wind and solar development have revitalized rural economies, the reality is that not all wind or solar developments are created equal. As one simple example, the community-wide economic benefits of a project vary from state to state based on property tax structure. In some states, [local schools benefit](#), where in others they do not. Furthermore, when improperly sited or done against the wishes of a community, these clean energy projects can have lasting negative impacts. [Research I conducted with Dr. Doug Bessette](#) at Michigan State finds not everyone is “learning to live” with these energy developments; those who found the siting process unfair instead grow embittered as time passes. The importance of process fairness and engagement surfaces not only in our work here in Michigan, but as a theme [throughout the social science research](#) on renewable energy. Indeed, a recent [National Academy of Science report](#) finds that “the character and quality of the process of engaging the public in the context of siting and permitting projects will affect the pace and scale of decarbonization...If permitting reform includes significant reductions in meaningful opportunities for and forms of public engagement, then such reform would create a real risk of slowing, rather than hastening, the process of building out a net-zero infrastructure.”

In my verbal comments at the listening session on January 16th, I focused especially on the issue of scale, and I would encourage USDA and DOE to concentrate their attention to these largest scale (>50MW) renewables projects. Below I highlight 3 challenges of this increasing scale: the imposition of a rural burden, obscuring concentrated impacts, and setting unrealistic expectations about agrivoltaics.

**First: the imposition of a rural burden.** There are economies of scale in renewables and so these largest projects are increasingly sought as a means to transition the grid while keeping electricity costs within check. To expedite the energy transition, states across the country are [increasingly considering](#) some form of state-level control, especially for these largest projects. But, because only rural communities have enough land to host these large projects, this often leaves rural communities feeling that they alone are expected to [shoulder the burden](#) of the energy transition. Meanwhile, urban communities desiring the benefits of clean energy development lament that the focus on large projects effectively eliminates all opportunities for them.

**Second: obscuring concentrated impacts.** The increasing size of renewables projects also fail to acknowledge the concentrated impact that large-scale renewables may have on host communities. While the positive impacts—like tax revenues and landowner payments—increase with larger projects, so do the negative impacts. I bristle whenever someone talks about renewables needing 1% of a state’s farmland because the reality is that it’s not evenly spread; instead, we have some communities where proposed solar projects occupy [15%](#) or [even 40%](#) of the ag land in a township. And while wind is less consumptive of the land, we have some communities where there’s a wind turbine in every single township section (or square mile). This is not problematic where the community [sees the project](#) as compatible with their land use goals. But it becomes problematic in situations where the community is concerned about such a concentration. This may be ameliorated by better understanding the impact that a concentration of energy facilities may have on the local community, how these impacts vary based on the size or design of the energy project, and also development of policy options that address the concentration of renewables to help spread the benefits—or burdens—of these projects, depending on how you see it.

**Finally, setting unrealistic expectations about agrivoltaics:** While I am hopeful that agrivoltaics may help balance ag and energy interests, agrivoltaics are just not the norm at the 1000+ acre scale of projects we are seeing in my part of the country. We have yet to see an example of growing food [at more than 20 acres](#), and while solar sheep grazing is taking off, many parts of the country lack experienced graziers or a market for mutton to absorb the rise that going all-in on solar grazing would demand. As further evidence that agrivoltaics are not the norm: when a local or state government proposes requiring solar projects use agrivoltaics of this type, developers often label that policy restrictive. We need more research to make agrivoltaics at scale possible, and we also need more social science research to see if it increases social acceptance among neighbors (I admit I hypothesize it will not). But in the meantime, I think we need to be careful in suggesting to communities that if they allow solar, what they will get is agrivoltaics; because chances are, they probably won’t.

I believe there are many things that the USDA and DOE could jointly do to help address this issue of scale and provide resources to rural communities who are considering hosting these projects. For the last couple of years in particular, I have been trying to develop [programming in Michigan](#) as well as [convening Extension professionals](#) across the Midwest, and [practitioners and academics](#) from across the country to identify practical solutions to allow rural communities to benefit from renewable energy. I list below some of the key ideas that have come from these efforts, but would be happy to discuss or brainstorm further.

- **Research on community impacts of renewables:** There is no shortage of research on how renewable energy projects—in their various permutations—impact global emissions or the cost of electricity under various policy scenarios. What is far less studied are the impacts that renewables projects have on the local communities that host them, how these impacts vary based on the scale or design of the renewables project, or vary based on state/local policies. While tax payments are touted as the biggest benefit to host communities, they vary from state to state and sometime from community-to-community but haven't been comprehensively studied. Likewise, while many rural communities are struggling with undesirable population trends, there has been no research on whether a big wind or solar project staves off population loss or growth, or whether it exacerbates the existing trend. There is also no research as to whether there is a tipping point of a scale of a solar project does have a notable impact on the local ag economy, whether on the tenant farmers or the ability to keep the grain elevator or dairy co-op open. In communities where the ag economy has already reached a tipping point from other development pressures, solar may be a way to soften the transition for the remaining farmers, or it may be just one more stressor. Furthermore, what are the ramifications when energy developers buy, rather than lease, the property, a trend that is increasingly seen in solar development?
- **Expanding policy options:** As states increasingly prioritize addressing carbon emissions, many are advancing policies to expedite renewables siting. Few, however, have explicitly considered how to balance state and local land use priorities, especially as it relates to the concentration of energy facilities. One idea we've floated in Michigan is a [“fair share” policy](#): assigning each community (urban and rural alike) a clean energy obligation, but providing each the flexibility to determine how it will achieve that obligation. Similarly, few states have given much consideration to how to mesh energy and agricultural priorities. Most states' farmland preservation policies are silent on how to treat large-scale wind and solar in preservation programs. There have been scantily few discussions about how public or private land conservation programs might coordinate with energy planning to think through conflicting priorities on lands, for example, that are adjacent to transmission infrastructure. Furthermore, now is the time to expedite discussions about whether and how solar installations might help expand the reach of USDA programs that incentivize rebuilding soil health or improving water quality.
- **Funding to support community-driven planning processes:** One of the key obstacles to renewables deployment is that too many communities are reacting to project proposals rather than proactively considering how renewable energy development may help them achieve community goals. A community-driving planning process allows the community

to flip the script: seeing renewable energy as the solution to a long-held community problem rather than the problem itself. A [DOE-supported project](#) is underway right now to create a guide for community-centered solar discussions. Funding from USDA could extend this to include a broader mission of “planning for rural prosperity,” providing communities with the tools to understand how any rural development opportunities (including energy infrastructure) impact the goals and values that they care about.

- **Investment in a Rural Workforce:** Whether we are talking about facilitating a planning process or just getting rural communities good information about the true impacts of renewable energy, rural communities need to get information from folks [who they trust](#) and who respect their viewpoints. That requires an investment in a rural workforce—of [Extension professionals](#), land use planners, rural attorneys and others. The new R-STEP funding opportunity from DOE is a crucial step toward establishing expertise within State Energy Offices and Extension programs, but resources that expand this to more states and make it possible to provide longer-term funding would help to establish a cadre of professionals who can assist rural communities as they navigate the energy transition.

Again, I’m very excited to see USDA and DOE jointly working together on this topic. It’s a clear recognition of the critical role rural communities will play in an energy transition, and I also hope it generates new knowledge and tools to ensure that the clean energy build-out is done in a way that empowers rural communities in the process. If I can be of any service—pointing you to additional research, practical tools, or the network of practitioners and applied academics who have been on the front lines of this transition—please don’t hesitate to contact me.

Sincerely,



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