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**Comments for Joint Hearing of the Agriculture and Rural Affairs & Local Government  
Committees on “Utility Scale Solar Development & Local Government Ordinances”**

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Senators Vogel and Dush, honorable members of the Committees, good morning and thank you for the opportunity to address the topic of utility scale solar development and related local government ordinances. I am Mohamed Rali Badissy and have the pleasure of coming before you today in my capacity as an Assistant Professor of Law at Penn State Dickinson Law. My primary area of research is the interaction between public regulation and private energy projects and prior to joining the faculty at Dickinson Law last year, I spent the last decade with the Commercial Law Development Program of the U.S. Department of Commerce advising governments around the world on how regulatory efficiency can reduce energy costs and increase energy access. I am particularly honored by this opportunity to discuss with you the essential role that state and local governments will play in the guiding the Commonwealth of Pennsylvania, already the most dynamic energy producer in the country, through an equally dynamic energy transition.

My primary goal today is to share some preliminary observations from a research project that we are currently conducting at Penn State Dickinson Law, which seeks to review each of the Commonwealth’s more than 2500+ local zoning ordinances to determine what, if any, guidance is provided for the development of solar energy systems. We started this project in response to requests for guidance from local governments on solar ordinances received by the Penn State Extension program and Penn State’s Marcellus Center for Outreach and Research, with whom we continue to collaborate. As part of Penn State’s land grant mission, we believe it is important to be responsive to these kinds of requests from our community and began the research project to establish a baseline of the current regulation of solar projects to provide a benchmark for local governments. This project has received generous support from Penn State’s Center for Energy Law & Policy and has benefited from collaboration with both public and private stakeholders, including our colleagues from PSATS, who will also be addressing you this morning. Also, as you can likely imagine, reading through 2500+ zoning codes is a monumental task, and I would like to acknowledge the important contribution of my researcher assistants, Asahel Church (who has joined me here today) and Andrea Prisco (who is watching us online).

The most important finding of our research, thus far, is that only one in twenty local zoning codes currently provide specific guidance for utility scale solar projects. More precisely, we found that 87% of zoning codes in the Commonwealth provide no guidance whatsoever. The



remaining 13% primarily address accessory solar energy systems for self-generation and that less than half of that 13%. Only 5% of the total set of zoning codes have adopted guidance for utility scale solar energy systems. This lack of guidance on utility scale solar projects is particularly significant when one considers that solar is the fastest growing source of energy in the Pennsylvania, a trend that many expect to accelerate due to our strategic location amongst major energy markets, our existing transmission capacity, and the availability of land for large-scale projects.

Practically speaking, this lack of clear regulation is also a significant commercial risk for project developers since they do not know what to expect when seeking a conditional use permit for their utility scale project. The uncertainty around permitting is typically described as a soft cost since it requires hiring lawyers like myself to work through the regulatory process and takes away from capital that could be spent on hard costs like engineering, design, and installation. Controlling these soft costs is becoming more important for solar projects since, as the cost of the hardware continues to fall by an average of 18% a year, the proportion of the cost of solar energy that is based on soft costs increases. Put simply, the ability of local governments to enact clear guidance for utility scale projects has a direct and growing impact on the energy costs that show up in our utility bills every month.

While we plan on publishing the full results of our research in the next few months, I would like to share some specific examples of both consistency and variability in local zoning ordinances that may be of interest to any policymakers in the space. I should start by noting that much of what we found in local zoning ordinances is familiar in that they adopt the same setback, height and other general zoning limits that currently exist in the code for similar land uses. Where there is variation, however, the impact is significant.

First, the definitions of utility scale projects are ambiguous. Some zoning codes define utility scale as being any project where the primary use of the generated electricity goes beyond the demands of the occupant, which is so broad that it could include solar facilities meant to serve an industrial park or school district and would almost certainly include the community solar projects proposed in SB472. Other zoning codes exclude projects that are even minimally intended to serve the energy needs of occupants, meaning that one could develop a solar energy system on top of a warehouse or farming operation that approach is the scale of a utility project but avoids that type of regulation.

Next, lot restrictions also vary considerably. Some jurisdictions limit utility scale projects to lots have a minimum size, such as 100 acres, which severely limits utility scale projects given that the average farm size in Pennsylvania is roughly 125 acres and most solar products to date have involved aggregation of multiple small farm holdings as opposed to a lease from one large landowner. Lot coverage limits can have a similar effect, such as when an ordinance prohibits more than 10 acres of any given lot to be covered by a utility scale solar energy system.



Finally, given the relatively new nature of photovoltaic solar energy systems, existing solar ordinances have struggled to establish clear design and operations standards. When it comes to screening of solar installations for the benefit of neighbors, some ordinances are hyper-specific even down to the type of foliage to be used, while others provide little to no guidance. Similarly, with glare mitigation, many ordinances require this issue to be addressed by project developers but lack guidance on either the methodology or the mitigation to be used. As my colleague Tom Murphy from Penn State's Marcellus Center for Outreach and Research shared with the committee last week, the issue of decommissioning is still largely uncertain with solar energy systems given the lack of history with the cost of panel recycling any significant likelihood that most solar energy projects would be recommissioned rather than decommissioned.

I hope that even this brief overview of our survey of solar ordinances across Pennsylvania helps to demonstrate how significant the challenge is to bring predictability and effectiveness to this space. If this much inconsistency can be observed in just the 5% of zoning codes that have adopted solar ordinances thus far, one can only imagine how much more fractured the regulatory space could be as more and more local governments seek to regulate this fast-growing activity. We should also be mindful that, even if greater standardization were to emerge in the scope and definitions in solar ordinances, difference could still emerge across the state due to varying capacity of local governments to evaluate project proposals, establish and enforce technical standards, and monitor compliance over the decades long project timeline.

I would like to conclude by pulling back from the focus on local zoning ordinances to highlight the relevance of this issue at a state, federal, and global level. The most significant contributor to our state and federal decarbonization policies is the transition to lower carbon energy systems such as solar. This suggests a massive build out of solar energy capacity with an exponential increase in project deployments over the next decade. However, whereas most traditional energy projects were in industrial corridors, most solar energy projects are expected to be developed in rural communities where the primary land-use has been agriculture instead of infrastructure. In effect, that means that we are shifting the burden of regulating this new energy future from the local governments that are most familiar with this infrastructure to those that are the least prepared. This challenge for local governments is even more intimidating when one considers the increasing complexity of the solar energy systems, which today are focused on panels, but tomorrow will include batteries, and in the future may be integrated with everything from green hydrogen production to carbon sequestration.

What this means is, if we are serious about enabling an energy future for Pennsylvanians that it is sustainable and affordable, we should be just as concerned with government capacity as we are with solar capacity. This is why my team and many others at Penn State are focused on supporting our communities through education and outreach during the energy transition and why it has been such an honor to share our limited experience thus far would you here today.

Thank you for this opportunity, and I welcome any questions from the committee members.