



Testimony of Scott Elias, Vice President of Policy and Market Development, CleanCapital

To the

Senate Consumer Protection and Professional Licensure Committee– Public Hearing on Solar Energy’s Impact on Pennsylvania Ratepayers

June 20, 2023

Chairman Stefano and Boscola, members of Senate Consumer Protection and Professional Licensure Committee, thank you for having me here today and for your interest in solar energy, a \$36 billion dollar industry with over 255,000 American jobs across all 50 states.

I am Scott Elias, Vice President of Policy and Market Development at CleanCapital. CleanCapital is a diversified clean energy investment platform focused on the middle-market solar and storage industry and one of the largest commercial solar asset owners in the U.S, with cumulative acquisitions totaling over 200 operating and new construction projects in 27 states and U.S. territories, totaling more than 400 MW. CleanCapital is a member of MAREC Action, the Solar Energy Industries Association (SEIA), and the Coalition for Community Solar Access (CCSA).

Founded in 2015, CleanCapital’s mission is to accelerate the flow of institutional capital into clean energy projects. In 2022, CleanCapital acquired BQ Energy--a national leader in brownfield and landfill clean energy development and this month we announced two major milestones: CleanCapital secured an additional commitment of up to \$500 million from Manulife Investment Management to fund early-stage solar and storage development, acquire solar and energy storage assets throughout the United States, and expand our partnerships with developers in emerging markets. We also announced CleanCapital’s cumulative deployment of more than \$1 billion to fund operating, new construction, and early-stage development of solar and storage assets, helping businesses, non-profits, and municipalities across the country save money on their electric bills while meeting their renewable energy goals.

Solar Energy Has Experienced Massive Growth Since 2000

I’ve been asked to provide a solar 101 for you all, so it’s worth starting with the simple fact that solar energy has experienced massive growth since 2000. In the first quarter of 2023, 54% of all new electric capacity added to the grid came from solar, the largest such share in history.

Solar’s increasing competitiveness against other technologies has allowed it to quickly increase its share of total U.S. electrical generation - from just 0.1% in 2010 to nearly 5% today. That’s in large part because the cost to install solar has dropped by more than 54% over the last decade, leading the industry to expand into new markets and deploy thousands of systems nationwide. And we are just getting started.

Over the next decade, the industry is expected to install 500 GW of new solar capacity, four times greater than the amount installed through 2022. That growth means energy jobs. It means construction jobs. It means private investment from the world’s largest institutional investors. And that growth can happen in Pennsylvania, which is currently lagging in solar growth relative to other states across the nation.

Making Sense of Different Types of Solar- Rooftop, Distributed Generation, and Grid-Scale Solar

This panel is framed as rooftop solar and utility-scale solar, and I'm going to spend most of my time talking about distributed generation, which is often located on the roof. This is the type of solar that is currently most prevalent in Pennsylvania. I am also going to explain why a more accurate way to distinguish between different types of solar is whether it's distributed generation, where electricity is generated on-site or near the point of its use—often on rooftops—or utility-scale or grid-scale solar generation, where electricity generated from solar projects operate similar to traditional power plants, transmitting electricity across transmission lines that subsequently deliver that electricity to homes and businesses through the distribution system.

In Pennsylvania law, distributed generation is often referred to at the Public Utilities Commission as customer-generators, where solar is generated behind-the-meter. Because the generation is on the energy user's side of the meter, it's often called customer-sited or on-site solar as well—and a lot of the times it's on the roof. So far in Pennsylvania, that is the thousands of homes that have or are contemplating installing 7–20-kilowatt systems (consisting of 10-20 panels, depending on the types of modules used) on their property to reduce their family's monthly electric bill. Usually that's rooftop solar, though residents can also install solar for their homes on the ground as well. Distributed Generation can also be a school that installs a solar carport or several solar installations on the school district's property that is intended to reduce energy costs for the entire K-12 district.

There are different ownership models for distributed generation. Some businesses sell to residential or commercial customers who choose to purchase their on-site systems. Others prefer third-party ownership models, where a company such as CleanCapital may own and operate the project, but where we sell the electricity the systems generate to the host customer—a homeowner or business—at a fixed rate that is typically lower than the local utility's traditional energy bill for a fixed term like 15-25 years, which can provide a hedge for the homeowner or business against volatile energy rates.

For example, this is what we do with the Felician Sisters of North America, who is the commercial electricity off-taker of a 365-kilowatt solar array we own and operate, mounted both on the roof and facility grounds of their headquarters in Beaver County. We also own a 530-kilowatt ground-mounted solar array onsite at Felician Sisters Coraopolis, which was one of the first solar systems in Allegheny County. There are many corporations in Pennsylvania who have installed customer-generators, often on their roof. In 2016 a Walmart in Bradford County installed a 400-kilowatt (kw) system on their roof. In Bucks County, Kohls installed a 450-kilowatt system on their roof, which is enough solar energy to power over 50 homes. In Cumberland County, Kohls, Target and Walmart all have rooftop solar installations in the 100–500-kilowatt range. Troegs Brewery installed a 643-kilowatt roof-mounted array in 2021.

In Pennsylvania, these customer-generators—whether they are installed on the roof or ground—can be up to 3,000-kilowatts in size or 3-megawatts and are eligible for net metering, a billing mechanism that credits the customer-generators—the solar systems on the property of homes, towns, churches, farmers, and businesses of all types—for the value of the excess electricity they add to the grid that serves nearby customer's loads, up to the amount of electricity used by the customer-generator during a billing period.

Distributed energy resources like rooftop solar are located closer to where energy is consumed, which makes the grid more resilient and less expensive, especially when paired with battery storage and

deployed at scale. That is because decentralized energy generated near the point of consumption—at houses and business—reduces the strain on distribution systems and prevents losses in long-distance electricity transmission and distribution. There are a wide variety of [cost-benefit studies](#) around the country that demonstrate the value that rooftop solar and distributed energy resources provide to local economies and the electricity system as a whole.

I mentioned earlier that last year CleanCapital acquired BQ Energy, which is building solar assets at all scales exclusively sited on retired industrial sites including refineries, steel mills, coal plants, mines, and otherwise environmentally compromised land.

As part of a joint venture with Allentown-based Talen Energy, BQ Energy is developing the Sunbury Solar project, a 20-megawatt solar project on closed ash basins adjacent to the decommissioned Sunbury power plant in Snyder County, and Holtwood Solar, a 20-Megawatt solar project on closed ash basins adjacent to the decommissioned Holtwood coal fired power plant in Lancaster County. Both of these projects are not considered customer-generators because they will be transmission-connected and sell their electricity on the PJM wholesale market, which stands to benefit from tailwinds created by increased renewable demand, aggressive corporate clean energy goals, and the rapid retirement of thermal resources.

These grid-scale or utility-scale solar plants, provide the benefit of fixed-priced electricity during peak demand periods when electricity from fossil fuels are the most expensive, and often can benefit from economies of scale that help ensure financing commitments.

Conclusion: Impact on Ratepayers

In conclusion, to answer the question of the impact of solar energy on Pennsylvania’s ratepayers it is important to recognize that customer-generators—distributed generation like rooftop solar—and grid-scale solar have different types of costs and benefits for ratepayers. The customer who has solar on their rooftop or property behind the meter for their own use sees their electric bill reduced by self-consumption—the amount of power they generate for themselves—and the amount of excess power they get credited for that goes to the grid for others use.

Opponents to distributed energy resources like rooftop solar often state that customer-generated solar results in a “cost shift” to non-solar users. However, at low levels of solar penetration, this claim is significantly overstated when one considers both the costs and benefits of distributed generation. Indeed, [PECO’s most recent value of solar study](#) indicated that solar’s effect on PECO’s business is small and that even at 5% energy penetration, solar is unlikely to negatively affect Pennsylvania utilities. We are not even at 2% penetration yet, so assertions that current or future solar customers have shifted or will shift costs to others, and/or create new costs, should be demonstrated with valid, transparent data that reflects the values, avoided utility costs, and results of deploying solar at the distribution level, as well as the utility cost of providing service.

Indeed, with customer-generators like rooftop solar, the costs to other, non-participating ratepayers—or non-solar users—are principally the revenues which the utility loses as a result of solar production serving the customer’s on-site load, plus the energy credits which the utility provides when the solar customer exports power to the grid. But it is important to remember customers have a right to reduce their consumption of grid-supplied electricity with energy efficiency, demand response, storage, or on-site

solar, especially on summer days when everyone is running their air condition and demand for electricity is at its highest. It is also important to remember that exported power from customer-generators serve the loads of nearby customers, including non-solar users and these exports have value to the grid—and thus all ratepayers. With the relatively low level of solar penetration in Pennsylvania and across PJM, solar production is still primarily providing power during high-cost periods, particularly in the summer, which provides the highest level of benefits for all ratepayers. Additionally, rooftop and grid-scale solar is increasingly being paired with energy storage which will enable solar to be available during periods of high electricity demand even as those periods shift later into the evening.

Indeed, research shows that an electric grid that better leverages distributed energy resources—like rooftop and other customer-sited solar and storage—alongside continued growth of large-scale renewables and transmission can save the grid [billions of dollars](#) by permanently reducing demand and stress on the bulk power system. There are real benefits to generating power on rooftops, which are located closer to urban and suburban load centers. Scaling and optimizing rooftop solar and other distributed energy resources and transmission-connected solar, along with an emerging energy storage industry, will help Pennsylvania achieve its changing energy demands, avoid costly distribution system investments, and maintain Pennsylvania’s status as a net energy exporter. And it will do this while creating jobs, leveraging private investment, augmenting Pennsylvania’s economic growth, and further developing a diverse energy portfolio that contributes to a smarter, more flexible grid architecture that is better able to withstand shocks from extreme weather, targeted attacks, or other system failures.

Pennsylvania should update its energy policies to take advantage of the federal tax benefits available, which will also allow the Commonwealth to catch up with other states and empower consumers across the Commonwealth who want more access to proven, cost-effective solar technology. We have an opportunity to update and augment our energy portfolio by adopting modern policies that can facilitate business, provide investment certainty, and develop a more diverse energy portfolio that offers Pennsylvania residents, businesses, farms, nonprofits, municipalities and townships the best opportunity to benefit from America’s fastest growing source of power.

I’ll end by saying that one way to think about what CleanCapital does is that we provide ‘rocket fuel’ in the form of capital to small-businesses and local developers who are looking to grow and scale in the energy business of today and tomorrow. By establishing long-term policy certainty, my hope is that the capital my company deploys will increasingly be committed across rural, urban, and suburban Pennsylvania.

Thank you once again for inviting me to submit this testimony. I look forward to answering any questions you may have.

Sincerely,



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